US89
STATE ENVIRONMENTAL STUDY

CHAPTER THREE: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the existing environmental, social, and economic conditions within the State Street corridor and how these conditions would be affected by the No-Action and Preferred Alternatives. Existing conditions were identified based on literature and data file searches, coordination with federal, state, and local agencies, and field investigations. Additional details relating to technical research performed in the preparation of this Environmental Study (ES) that are not discussed in this document are included in the project records.

Each affected environment will be evaluated for direct, indirect, and cumulative impacts in addition to avoidance, minimization, and mitigation measures. Types of impacts are explained in the following definitions[1] and illustrated in Figure 3-1:

- **Direct impacts** are caused by the project and occur at the same time and place. These are discussed in each resource area subsection.
- **Indirect impacts** are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing efforts and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. These are discussed in each resource area subsection.
- **Cumulative impacts** are impacts on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. These impacts are discussed in section 3.21.

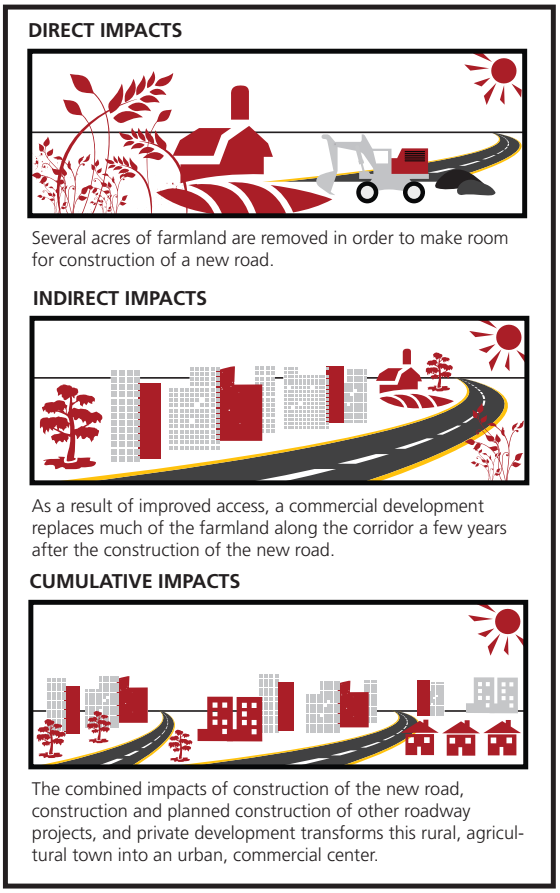


Figure 3-1. Direct, Indirect, and Cumulative Impacts

1 Direct, indirect, and cumulative impact definitions are from 40 CFR 1508.

3.1 LAND USE

Zoning maps and land use master plans show current and planned land uses within Orem, Lindon, Pleasant Grove, and American Fork. Zoning maps show how land within a municipality is currently zoned and land use master plans show proposed future land uses. Local governments develop these maps and plans and use them to identify community goals and priorities, and to assist in decision-making procedures.

Affected Environment

Zoning and Land Use Master Plans

Current Zoning

A majority of the land uses along the State Street corridor are currently zoned with commercial designations, the exception being the residential designation along State Street in Pleasant Grove (see Figure 3-2).

Land Use Master Plans

Land Use Master Plans indicate that land uses are planned to be commercial along the State Street corridor except for a section of the south side of State Street in Pleasant Grove. This area of land is planned for the Gateway Zoning District (see Figure 3-3).

Recreation Resources

Recreational areas along the State Street corridor include:

Lindon City Park, Lindon

Robinson Park, American Fork

Lindon City Park

The Lindon City Park is located at 200 North State Street in Lindon. It currently includes the Lindon City Center, three baseball diamonds, green space, and associated park facilities (see Figure 3-4).

Wills Memorial Park

Wills Memorial Park is located at 220 South and 420 West along State Street in Pleasant Grove. Impacts to the park were identified and assessed in the State Street Railroad Bridge Environmental Assessment and Section 4(f) Evaluation (see Figure 3-4).

Robinson Park

Robinson Park is located at 100 East Main Street in downtown American Fork. It is located on the southwest corner of the intersection of State Street and 100 East and includes green space and associated park facilities (See Figure 3-4).

Section 6(f)

The Land and Water Conservation Fund Act (LWCF) was established in 1964 to enable the purchase of land, water, and wetlands by federal, state, and local governments for the benefit of all Americans. It has been used to protect wildlife habitat, historic sites, and clean water sources, as well as to expand recreational opportunities such as parks and trails. Areas in which these funds were used have special protection under Section 6(f) of the LWCF. According to the Utah Department of Parks web site, there are no designated Section 6(f) properties or facilities along the State Street corridor.

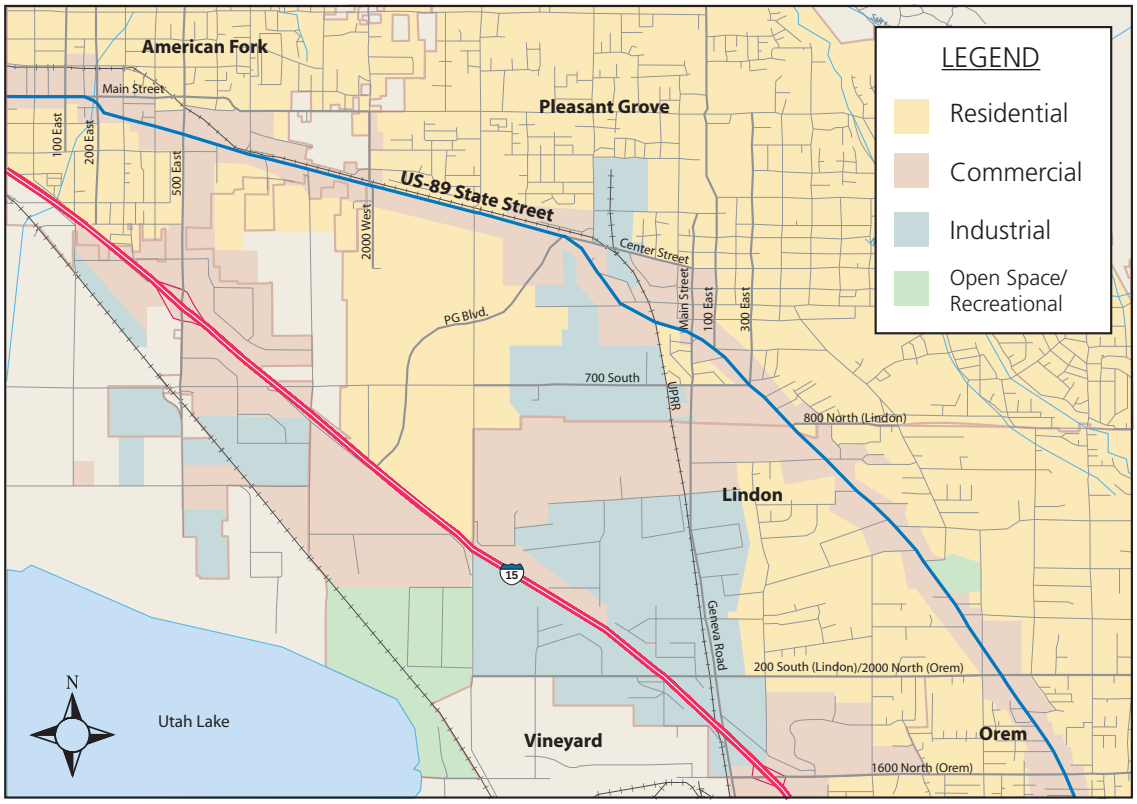


Figure 3-2. Zoning Map

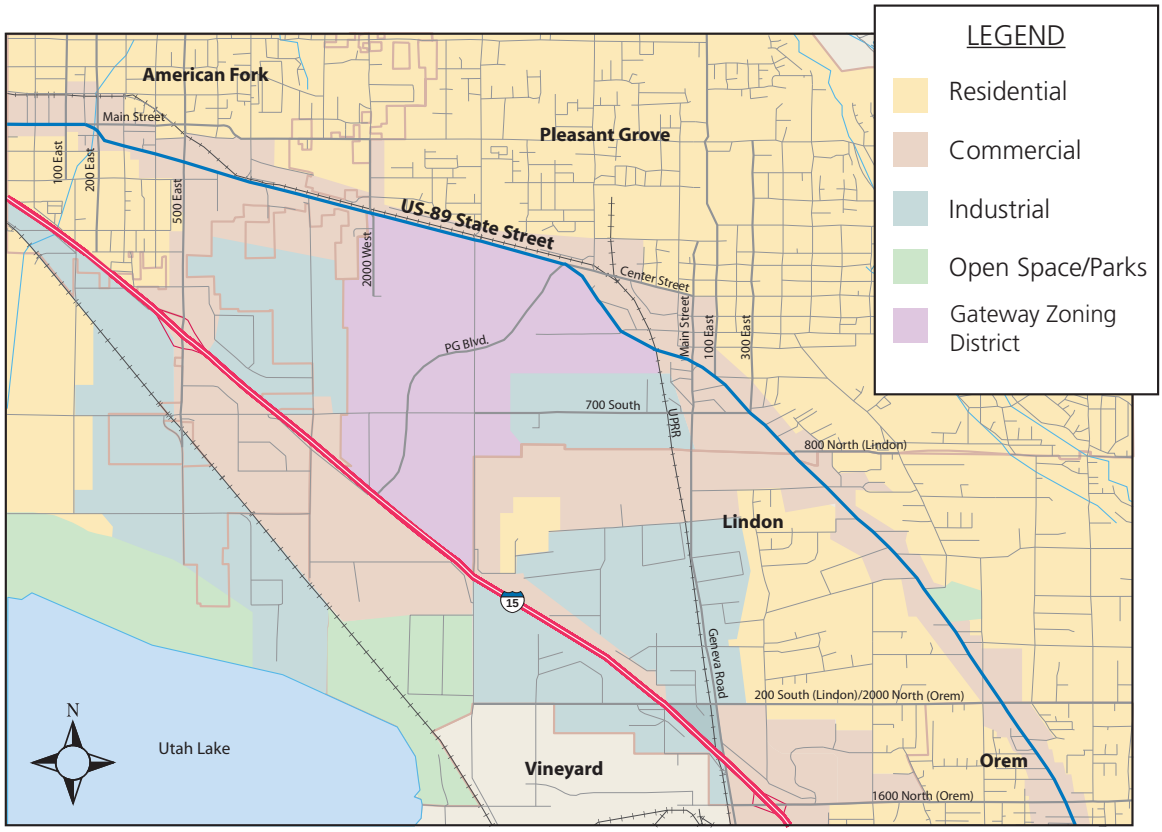


Figure 3-3. Land Use Master Plans

Figure 3-4. Parks in the Project Area

Impacts

No-Action Alternative

Direct Impacts

The No-Action Alternative would not change planned land uses or impact recreational resources in the project area.

Indirect Impacts

The No-Action Alternative would not indirectly impact the planned land uses or recreational resources along the State Street corridor.

Preferred Alternative

Direct Impacts

The Preferred Alternative would require the acquisition of approximately 5 acres along the State Street corridor, converting property zoned as residential or commercial to State Street right-of-way. Specifically, the Preferred Alternative would convert approximately 0.7 acres of residential property to roadway use and approximately 4.4 acres of commercial property to roadway use. For more information on right-of-way acquisition for specific properties see the Relocations Section (3.5) of this ES. The Preferred Alternative would not impact recreational resources in the project area.

Indirect Impacts

The Preferred Alternative would not change planned land uses. Widening the State Street corridor to a consistent seven-lane roadway and increasing the capacity of the facility would not result in land

use changes. In addition, the Preferred Alternative is not likely to induce land use changes in the future. A majority of the corridor is currently designated as commercial and the Preferred Alternative would provide a facility which supports the growth and enhancement of commercial opportunities on State Street. The Preferred Alternative would not indirectly impact recreational resources in the project area.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation will be required.

3.2 FARMLANDS

The Farmland Protection Policy Act (FPPA) was established in 1981 and is intended to "minimize the extent to which federal activities contribute to the conversion of farmland to nonagricultural use." The U.S. Department of Agricultural, Natural Resources Conservation Service (NRCS) is responsible for overseeing compliance with the FPPA. Within the project area, any farmland that is considered prime, unique, or of statewide importance must be identified. According to 7 CFR 658.2a, farmland for the purpose of a prime or unique or statewide importance determination does not include land within city limits or already committed to urban development.

In the Utah Code, Title 17 Chapter 41, the State of Utah allows for the formation of Agricultural Protection Areas (APAs). Areas designated as such, are protected for the production of commercial crops, livestock, and livestock products. APAs can be established in unincorporated parts of a county or within a city or town limit.

Affected Environment

All land within the State Street corridor lies within incorporated city limits and no land is currently zoned or master planned for agricultural use. Therefore, no prime, unique, statewide important farmland, or APAs have been identified in the project area.

Impacts

No-Action Alternative

Direct Impacts

The No-Action Alternative would not directly affect prime, unique, statewide important, or APA designated farmlands within the project area.

Indirect Impacts

The No-Action Alternative would not indirectly affect prime, unique, statewide important, or APA designated farmlands within the project area.

Preferred Alternative

Direct Impacts

The Preferred Alternative would not directly affect prime, unique, statewide important, or APA designated farmlands within the project area.

Indirect Impacts

The Preferred Alternative would not indirectly affect prime, unique, statewide important, or APA designated farmlands within the project area.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation will be required.

3.3 SOCIAL IMPACTS

A social assessment was performed on the State Street corridor by Rocky Mountain Social Science. The assessment analyzed social and demographic characteristics of area populations along the State Street corridor in order to identify the presence of populations that may experience heightened susceptibility to disturbance and relocation effects. Specifically, the assessment determined whether portions of the project area contained unusually large concentrations of racial or ethnic minority populations, elderly residents, or persons living at or below poverty levels.

Affected Environment

The social assessment identified the following four "neighborhood groupings" which represent different spatially-limited areas along the State Street corridor (see Figure 3-5):

Neighborhood Group 1 (northwest portion of project area) is comprised of the area represented by the 11 Census blocks that are immediately adjacent to and north of the portion of the State Street corridor located west of Main Street in Pleasant Grove and extending west to the 100 East intersection in American Fork.

Neighborhood Group 2 (southwest portion of project area) is comprised of the area represented by the 12 Census blocks that are immediately adjacent to and south of the portion of the State Street corridor located west of Main Street in Pleasant Grove and extending west to the 100 East intersection in American Fork.

Neighborhood Group 3 (northeast portion of project area) is comprised of the area represented by the 11 Census blocks that are immediately adjacent to and north of the portion of the State Street corridor located east of Main Street in Pleasant Grove and extending east to the 2000 North intersection in Orem.

Neighborhood Group 4 (southeast portion of project area) is comprised of the area represented by the 12 Census blocks that are immediately adjacent to and south of the portion of the State Street corridor located east of Main Street in Pleasant Grove and extending east to the 2000 North intersection in Orem.

These project area neighborhoods are included in the 46 Census blocks that adjoin the State Street corridor and the combined populations of these four neighborhoods was 3,768 at the time of the 2000 Census. Specifically, that total population includes 773 residents located in Neighborhood Group 1, 515 residents in Neighborhood Group 2, 1,438 residents in Neighborhood Group 3, and 1,042 residents in Neighborhood Group 4 (see Table 3-1). Nearly all of the State Street corridor population was located in neighborhoods which are not immediately adjacent to State Street. The few residential structures which are located along and immediately adjacent to State Street are scattered irregularly throughout the length of the corridor, with no more than four homes clustered in any location.

Overall, the State Street corridor exhibits little racial or ethnic diversity, with 91% of the population classified as white in 2000. The Hispanic/Latino population represents the largest ethnic/racial minority

group, comprising 9% of the population in 2000, which is a slightly higher proportion of Hispanic/Latino residents than in the larger surrounding community. The concentration of Hispanic/Latino residents was highest in Neighborhood Group 1 (13.6%), and lowest in Neighborhood Group 3 (7%). The social assessment indicated that it is likely that the presence of Hispanic/Latino populations has increased area-wide since 2000, given broader population trends occurring throughout Utah in recent years.

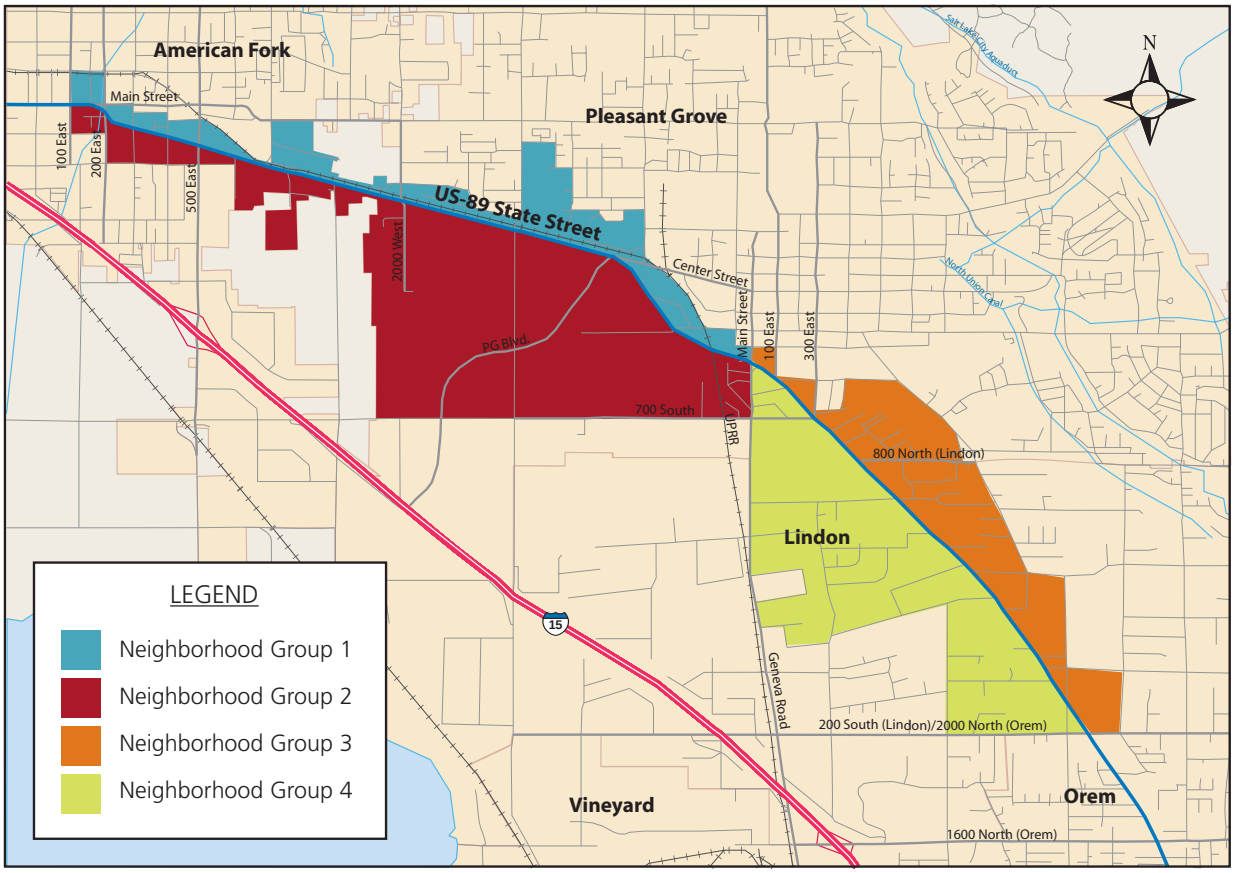


Figure 3-5. Neighborhood Groups

At the time of the 2000 Census, the percentage of residents 65 or older living in corridor-adjacent census blocks along State Street corridor varied among the neighborhood groups, ranging from a low of 3.1% in Neighborhood Group 1 to a high of 15% in Neighborhood Group 2. The percentage of residents in this older age bracket for the combined set of corridor-adjacent Census blocks (7.6%) is only slightly higher than for Utah County as a whole (6.4%). See Table 3-1.

Table 3-1. Socio-Demographic Characteristics of Project Area

	Neighborhood **Group No. 1**	Neighborhood **Group No. 2**	Neighborhood **Group No. 3**	Neighborhood **Group No. 4**	Neighborhood Groups Combined	Surrounding Area Census Block Groups	Utah County
Total Population	773	515	1,438	1,042	3,768	17,856	368,536
Percent White	88.0%	91.7%	91.3%	92.2%	90.9%	93.7%	92.4%

	Neighborhood **Group No. 1**	Neighborhood **Group No. 2**	Neighborhood **Group No. 3**	Neighborhood **Group No. 4**	Neighborhood Groups Combined	Surrounding Area Census Block Groups	Utah County
Percent Hispanic	13.6%	9.3%	7.0%	9.4%	9.3%	6.7%	7.0%
Percent 65 or older	3.1%	15.0%	7.2%	7.8%	7.6%	7.2%	6.4%
Total Number of Households	219	164	408	269	1060	4866	100,164

Public Facilities

Schools: No public schools are located along the State Street corridor. However, four elementary schools are located in close proximity.

Emergency Services: An Intermountain Insta-Care Office is located at 1975 North State Street in Orem; and Lindon City Police and Fire Stations are located at 100 North State Street in Lindon.

Utilities: Culinary water, sewer, storm drain, electric power, natural gas, cable television, telephone, and fiber optic lines are located within, parallel, and cross over and under the State Street corridor.

Other Public Facilities: The local government office for Lindon City is located at 100 North State Street in Lindon.

Impacts

No-Action Alternative

Direct Impacts

The No-Action Alternative would leave existing social conditions and trends in the study area intact. Schools, public facilities and utilities would not be directly impacted. Increased traffic congestion as a result of the No-Action Alternative, could slow emergency response vehicles using the State Street corridor.

Indirect Impacts

The No-Action Alternative would leave existing social conditions and trends in the study area intact. Schools, public facilities and utilities would not be indirectly impacted. Increased traffic congestion as a result of the No-Action Alternative, may force emergency response vehicles to use local streets instead of the State Street corridor when responding to emergencies.

Preferred Alternative

Direct Impacts

The Preferred Alternative would leave existing social conditions and trends in the study area intact and would not have any direct social impacts. The scattered locations of residences, the effects of living along an already-busy roadway that presents a barrier to interaction with neighbors living on the other side of the corridor, and the small number of potential residential relocations all suggest that levels of community social cohesion would not be adversely impacted. The composition of the project area population, levels of familiarity and interaction among neighbors, and neighborhood activity patterns are not likely to change substantially due to implementation of the Preferred Alternative. Furthermore, the social conditions which characterize the established residential neighborhoods surrounding the State Street corridor would not be altered in meaningful ways as a result of the State Street corridor project.

Schools, and public facilities would not be directly impacted by the Preferred Alternative. The increase in road capacity could improve travel times and safety for emergency services vehicles. The Preferred Alternative would directly impact many of the existing utilities.

Indirect Impacts
The Preferred Alternative would have no indirect impacts on existing social conditions and trends along the State Street corridor. There are no reasonably foreseeable impacts which would occur at a later time to the social conditions of the neighborhoods on, or those beyond, the State Street corridor.

Schools, emergency services, utilities, and public facilities would not be indirectly impacted by the Preferred Alternative.

Avoidance, Minimization, and/or Mitigation Measures
No mitigation will be required.

3.4 ENVIRONMENTAL JUSTICE POPULATIONS

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by the President on February 11, 1994, directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent possible and permitted by law.

Fundamental Environmental Justice principles include:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process
- To prevent the denial of, reduction in, or substantial delay in the receipt of benefits by minority and low-income populations

Executive Order 12898 and the United States Department of Transportation (USDOT) and Federal Highway Administration (FHWA) Orders on Environmental Justice addresses persons belonging to any of the following groups:

- **Black** - a person having origins in any of the black racial groups of Africa
- **Hispanic** - a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race
- **Asian** - a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent
- **American Indian and Alaskan Native** - a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition

- **Native Hawaiian or Other Pacific Islander** - a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands
- **Low-Income** - a person whose household income (or in the case of a community or group, whose median household income) is at or below the Health and Human Services (HHS) poverty guidelines

Affected Environment

As stated in Section 3.3, the State Street corridor exhibits little racial or ethnic diversity with the Hispanic/Latino population representing the largest ethnic/racial minority group (a slightly higher proportion of Hispanic/Latino residents than in the larger surrounding community). The concentration of Hispanic/Latino residents was highest in Neighborhood Group 1 and lowest in Neighborhood Group 3. According to the social assessment, it is likely that the presence of Hispanic/Latino populations has increased area-wide since 2000, given broader population trends occurring throughout Utah in recent years.

Census data pertaining to income levels and poverty status of households are not reported at the Census block level. However, a rough indication of the potential for spacial concentration of poverty-level populations in the areas surrounding the project corridor can be obtained through examination of data for the set of Census Block Groups that include the 46 corridor adjacent Census blocks as well as other nearby off corridor areas in the project vicinity. At the time of the 2000 Census 9% of the households in this larger surrounding area fell below the federal poverty level. This is slightly lower than the 10.7% reported at that time for Utah County as a whole.

An Environmental Justice population living along State Street near the Pleasant Grove Bridge was identified in the Environmental Assessment for the proposed State Street Railroad Bridge, Pleasant Grove project (2005).

Impacts

No-Action Alternative

Direct Impacts

The No-Action Alternative would not directly impact minority or low-income populations in the project area.

Indirect Impacts

The No-Action Alternative would not indirectly impact minority or low-income populations in the project area.

Preferred Alternative

Direct Impacts

The neighborhoods surrounding the project area do not exhibit especially high concentrations of minority or low-income populations, therefore the Preferred Alternative would have no impact on Environmental Justice populations.

The fact that the Preferred Alternative would not meaningfully alter physical or social conditions in surrounding residential neighborhoods precludes concerns about adverse impacts among Environmental Justice populations in areas along the State Street corridor where there are higher than average concentrations of minority or low-income populations.

Indirect Impacts
The Preferred Alternative would not indirectly impact minority or low income populations in the project area.

Avoidance, Minimization, and/or Mitigation Measures
There will be no denial of, reduction in, or substantial delay in the receipt of benefits to minority and low-income populations. Relocation resources will be available to each relocated residence without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 U.S.C. 2000d, et seq.).

3.5 RELOCATIONS

The Utah Department of Transportation (UDOT) defines relocations as those homes and businesses directly impacted by a proposed alignment (i.e., the right-of-way line crosses the footprint of the structure) and proximity impacts (the right-of-way line does not cross the footprint but comes so close to the structure that it is uninhabitable). A threshold of 15-ft has been used as a guideline to assess potential residential relocations for this ES (see April 15, 2005 UDOT memo in Appendix D). For this ES, a determination for either potential relocation or potential proximity impact was made for each property impacted by the Preferred Alternative:

Affected Environment
Currently, there are approximately 47 residences and 400 businesses located along the State Street corridor.

Impacts
No-Action Alternative
Direct Impacts
The No-Action Alternative would not require the direct acquisition of additional right-of-way or the relocation of any residences or businesses.

Indirect Impacts
Redevelopment in accordance with master land use plans may result in relocations along the State Street corridor.

Preferred Alternative
Direct Impacts
The Preferred Alternative would require additional right-of-way for improvements to the State Street corridor (see Appendix B). Construction of the Preferred Alternative would potentially relocate four businesses, one residence, and one vacant building and would have a potential proximity impact to eight businesses and one vacant building (see Table 3-2 and Appendix B). Final determination of relocations will be determined during right-of-way acquisition and will include independent valuation of each property identified as a potential relocation and a potential proximity impact.

Table 3-2 Potential Relocations and Potential Proximity Impacts

	City	Address	Potential Relocation	Potential Proximity Impact
Kneader's Bakery	Orem	1900 North State Street		X
Vacant Building	Lindon	123 East 200 South		X
Royal West Martial Arts	Lindon	195 South State Street		X
Auto Auction	Lindon	190 South State Street	X	
Maverick Country Stores	Pleasant Grove	341 East State Street		X
Vacant Building	Pleasant Grove	285 East State Street	X	
Purple Turtle	Pleasant Grove	85 East State Street		X
Hobby Tractors	Pleasant Grove	660 West State Street		X
Puerto Escondido	Pleasant Grove	670 West State Street	X	
Christensen Truck Sales	Pleasant Grove	1199 West State Street		X
Residence	Pleasant Grove	1835 West State Street	X	
BJ Plumbing Supply	American Fork	992 East State Street		X
Del Taco	American Fork	730 East State Street		X
Granny's Automotive	American Fork	509 East State Street	X	
Mountain Heights Hardwood Floors	American Fork	530 East State Street	X	

Indirect Impacts

The Preferred Alternative would not require additional right-of-way or the relocation of any residences or businesses in the foreseeable future or in areas farther in distance from the State Street corridor.

Avoidance, Minimization, and/or Mitigation Measures

A search of the Wasatch Front Regional Multiple Listing Service in February 2008 (see www.utahrealestate.com) indicated that there are 4,340 homes for sale in Utah County. With regards to the available homes in each municipality along the State Street corridor, there are 399 in Orem, 42 in Lindon, 372 in Pleasant Grove, and 406 available homes in American Fork. It is anticipated that homes for sale in the area could serve as replacement housing for the residents who would be relocated due to the State Street corridor project.

A search of the Wasatch Front Regional Multiple Listing Service in February 2008 (see www.utahrealestate.com) indicated that there are 167 commercial properties for sale in Utah County. With regards to the commercial properties available in each municipality along the State Street corridor, there are 13 in Orem, 9 in Lindon, 12 in Pleasant Grove, and 11 in American Fork. It is anticipated that commercial properties for sale in the area could serve as locations for the business owners who would be relocated due to the State Street corridor project.

Right-of-way acquisitions will occur in accordance with federal, state, and local relocation policies. The acquisition and relocation program will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Relocation resources will be available to each relocated residence without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 U.S.C. 2000d, et seq.).

3.6 ECONOMICS

Affected Environment

A majority of the State Street corridor is currently zoned with commercial designations, the exception being the residential designations in Pleasant Grove. Accordingly, there are approximately 400 businesses along the State Street corridor. These businesses provide a variety of products and services which are vital to the residents along the State Street corridor and the economy of Utah County. Generally, the type of businesses represented on the State Street corridor include: grocery, drugstore, restaurant, automobile sales/repair, recreational vehicle sales/repair, financial, insurance, educational, fitness, medical, and gas station/convenience store.

Impacts

No-Action Alternative

Direct Impacts

The No-Action Alternative would not substantially change economic conditions along the State Street corridor.

Indirect Impacts

The No-Action Alternative would not indirectly impact economic conditions along the State Street corridor.

Preferred Alternative

Direct Impacts

The Preferred Alternative could potentially relocate several businesses (see Section 3.5 - Relocations for more information). However, generally the Preferred Alternative would facilitate economic development along the State Street corridor by providing an improved transportation system to the existing and planned commercial developments.

Indirect Impacts

New development would continue to positively fuel the economy by providing an increased tax base, employment opportunities, and housing to accommodate the expected population growth in Utah County. There are no reasonably foreseeable impacts which would occur at a later time to the commercial businesses on, or near, the State Street corridor.

Avoidance, Minimization, and/or Mitigation Measures

Access will be maintained to all businesses during construction. However, some temporary access closures may be necessary to accommodate grading or paving directly in front of driveways. Where minor impacts to businesses may occur, the property and business owners will be consulted during the design phase to develop solutions that will best suit the individual property while fulfilling the purpose and need of the project.

3.7 PEDESTRIAN AND BICYCLIST CONSIDERATIONS

Affected Environment

The State Street corridor is located in a predominantly developed area with intermittent sidewalks throughout. Where present, the sidewalk widths vary between 4-ft and 8-ft. Pedestrian use of the corridor appears to be light, most likely due to the limited number of residents Presently, bicyclists use the sidewalks (when present), shoulders (widths vary between 2-ft and 20-ft), and the travel lanes. Use of the corridor as a bicycle facility appears to be limited, most likely due to high volumes of traffic. Presently, there are no designated bicycle facilities or trail routes along the State Street corridor.

Planned Routes and Trails

The Mountainland Association of Governments' (MAG) Regional Transportation Plan (RTP) identifies plans for a 10-ft asphalt trail called the Historic Utah Southern Railroad Trail, which is a regional non-motorized trail planned between Pleasant Grove and Lehi. The trail is planned to be located in the Utah Transit Authority (UTA) right-of-way and would parallel the State Street corridor between Pleasant Grove Boulevard in Pleasant Grove and 700 East in American Fork. The Preferred Alternative includes adding an 8-ft sidewalk on each side of the road where inadequate or where no sidewalk presently exists, except for the location of the planned Historic Utah Southern Railroad Trail. The Preferred Alternative also includes the addition of consistent 8-ft shoulders on each side of the road.

Impacts

No-Action Alternative

Direct Impacts

There would be no direct impacts to existing or planned pedestrian and bicycle facilities as a result of the No-Action Alterative.

Indirect Impacts

There would be no indirect impacts to existing or planned pedestrian and bicycle facilities as a result of the No-Action Alterative.

Preferred Alternative

Direct Impacts

The Preferred Alternative would facilitate planned improvements to the State Street corridor that would enhance pedestrian and bicycle facilities.

Indirect Impacts

There would be no indirect impacts to pedestrian and bicycle facilities as a result of the Preferred Alternative.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation is required.

3.8 AIR QUALITY

The Clean Air Act Amendments of 1990 require that the U.S. Environmental Protection Agency (EPA) set standards for pollutants that are considered harmful to public health and environment. Pollutants identified for concern are carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), lead, particulate matter (PM_{10}), particulate matter smaller than 2.5 microns, and sulfur dioxide (SO_2).

Affected Environment

Attainment Status of Project Area

The Clean Air Act established the National Ambient Air Quality Standards (NAAQS) for airborne pollutants. Areas which have recorded violations of the NAAQS are designated as non-attainment areas and the Utah Division of Air Quality (UDAQ) must develop a State Implementation Plan (SIP) or Maintenance Plan. The SIP must set allowable emissions levels to be met and also identify control strategies to meet the NAAQS for those pollutants previously identified as non-attainment status.

The Transportation Conformity Rule sets forth the standards and guidelines for determining air quality conformity of a proposed transportation project. Specifically, the proposed transportation project must come from a RTP which demonstrates that the proposed project, when analyzed regionally with all other proposed transportation projects, conforms to the control strategies and emissions levels outlined in the SIP or Maintenance Plan. Furthermore, the Transportation Conformity Rule requires localized project analysis of CO and PM_{10} for projects within maintenance and non-attainment areas in order to demonstrate conformity with the SIP.

According to the Utah's NAAQS Areas of Non-attainment and Maintenance Map (updated July 2006), the State Street corridor is located in a non-attainment area for PM_{10} but is not located in a maintenance area for CO or for O_3 (see Figure 3-6).

Impacts

No-Action Alternative

Direct Impacts

The No-Action Alternative would not directly impact local or regional air quality.

Indirect Impacts

The No-Action Alternative would not indirectly impact local or regional air quality.

Preferred Alternative

Direct Impacts

Particulate Matter Analysis

Regional

The State Street corridor is located in a non-attainment area for PM_{10}. The PM_{10} SIP was amended by UDAQ on July 6, 2005 with an effective date of September 2, 2005. The Environmental Protection Agency (EPA) approval of the amended PM_{10} SIP is currently pending. The FHWA has determined that both MAG's RTP and the transportation improvement program (which includes the State Street corridor) conform to the amended PM_{10} SIP. Therefore, pursuant to 23 CFR 770, this project conforms to the SIP.

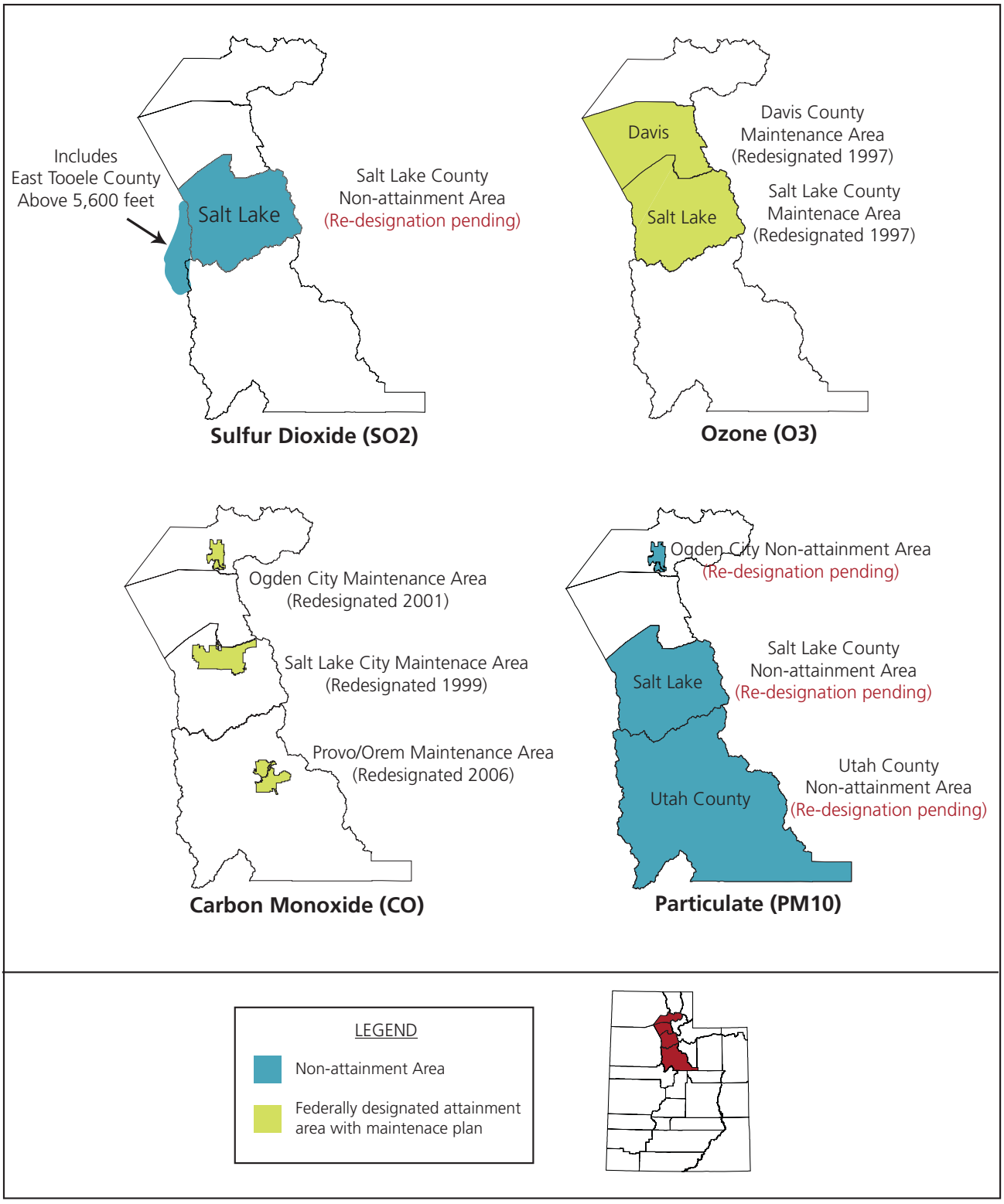


Figure 3-6. Non-attainment Areas

Local

PM_{10} currently has no EPA-approved quantitative method of hot spot analysis. In its absence, a qualitative analysis is presented. PM_{10} concentrations are related to a combination of direct PM_{10} sources such as fugitive dust that comes from increased vehicle miles of travel, and secondary reactions of NO_2 and SO_2 which form PM_{10} in the atmosphere. It is believed that traffic volumes and corresponding level of service have less impact on PM_{10} concentrations than the larger regional trends in the emission rates and industrial controls. Therefore, it can be expected that PM_{10} in Utah County would remain a regional issue related to prolonged temperature inversions and a gradual build-up of PM_{10}-related pollutants and would not be created by local PM_{10} concentrations at any intersection on the State Street corridor.

In addition, there are no gravel pits in the area that would contribute to PM_{10} concentrations. Dust abatement programs during construction would be monitored and would comply with applicable State standards in order to mitigate any temporary construction impacts of PM_{10}.

Carbon Monoxide Analysis

Regional

The State Street corridor project, with the exception of the 2000 North Orem/200 South Lindon and State Street intersection (which is the northern limit of the Provo/Orem CO Maintenance Area), is not located in a non-attainment or maintenance area for CO according to the EPA. Although further analysis is not necessary, it is worth mentioning some of the regional components of CO. While a vast majority of CO can be attributed to motor vehicles, industrial processes such as metals processing, forest fires, wood stoves, and even cigarette smoke are additional sources of CO emissions. Substantial changes in other emissions sources combined with changes in travel patterns and transportation networks might affect CO at a regional level. However, the effects of any individual project are likely to be small and uncertain.

Local

With the exception of the 2000 North Orem/200 South Lindon and State Street intersection, the State Street corridor is not located in a non-attainment or maintenance area for CO according to the EPA. While there is no requirement for additional CO hot spot analysis under transportation conformity rules, verification that the Preferred Alternative would not exceed CO levels which violate the NAAQS one-hour or eight-hour standards can be done using traffic volume screening.

Based on exhaustive sensitivity testing done for UDOT for the Air Quality Hotspot Manual, it has been determined that proposed roadways carrying traffic volumes in the range of 50,000 vpd with intersections projected to operate at Level of Service (LOS) D or worse in the design year (2030) do not cause CO levels to increase to the point of violating the NAAQS one-hour or eight-hour standards. The State Street corridor's anticipated 2030 traffic volumes range between 38,600 and 44,000 vpd (see Table 3-3), so no violation of the standards is anticipated. Therefore, the Preferred Alternative would not result in an exceedance of NAAQS standards.

Table 3-3. Traffic Volumes for 2030 State Street

Segment	2030 ADT
1600 N. (Orem) to Center St. (Lindon)	44,000
Center St. (Lindon) to Geneva Rd. (PG)	41,000
200 South (PG) to 1100 East (AF)	35,000
1100 East (AF) to Center Street (AF)	38,600

Ozone Analysis

Regional

The State Street corridor is not in a non-attainment or maintenance area for O_3 according to EPA. Although further analysis is not necessary, a short discussion of the regional nature of O_3 is warranted. O_3 is the result of a chemical reaction between oxides of nitrogen (NOx), volatile organic compounds (VOC), heat and sunlight. Vehicle exhaust, industrial emissions, and gasoline vapors are major sources of NOx and VOC. Meteorological conditions combined with changes in the regional land use and transportation patterns might affect O_3 at a regional level. However, the effects of any individual project are likely to be small and uncertain.

Local

O_3 is a regional pollutant and is not able to be analyzed at the project level. While no further analysis of project-level O_3 is necessary for the State Street corridor, it is important to mention that parts of the Wasatch Front region do have ozone-related issues, especially Salt Lake and Davis Counties which are non-attainment areas for O_3. Ozone is formed at a regional level, and consequently is a complex and regional problem that is unlikely to be negatively affected by the proposed State Street corridor project. In fact, if the proposed project ultimately results in a reduction of traffic congestion and delay, it may actually help to improve the region's O_3 problems, although project-level improvements are likely to impact O_3 only minimally.

Nitrogen Dioxide, Sulfur Dioxide, and Lead Analysis

There are currently no non-attainment or maintenance areas in Utah for any of these pollutants. Due to their regional nature and the minimization of motor vehicles as a source of these pollutants (especially lead), there is no reason to believe that the Preferred Alternative would affect concentrations of these pollutants in the project area.

Other Pollutants including Greenhouse Gases

At this time, no federal laws or regulations have been enacted and the EPA has not established criteria or thresholds for greenhouse gas emissions. Because the sources and effects of greenhouse gases are global in nature, to attempt project-level analysis of negligible increases or decreases of carbon dioxide (the primary greenhouse gas transportation-related emission) is technically unfeasible. Because of high levels of uncertainty, the results of such an analysis would not be likely to inform decision-making at the project level. The scope of such an analysis, with any results being purely speculative, goes far beyond the disclosure impacts needed to make sound transportation decisions.

Indirect Impacts

The Preferred Alternative would not cause a violation of air quality standards, therefore there would be no indirect impacts to air quality as a result of the Preferred Alternative. There may be additional fugitive dust caused by construction activities associated with the State Street corridor project, but these would be short-term and dust control procedures would be required by the Utah Department of Air Quality (UDAQ).

Avoidance, Minimization, and/or Mitigation Measures

Mitigation during construction will include the use of dust-control measures, per UDOT Standard Specification 01572 Dust Control and Watering. A permit for air quality impacts during construction will be obtained from the UDAQ by the contractor to control fugitive dust and emissions.

3.9 NOISE

The noise analysis was performed in accordance with 23 CFR 772 and the UDOT Noise Abatement Policy.

UDOT considers a traffic noise impact to occur when either of the following situations are expected at a sensitive land use:

1. The design noise level is greater than or equal to the UDOT Noise Abatement Criterion for each corresponding land use category (see Table 3-4) or;
2. The design noise level is greater than or equal to an increase of 10 dBA over the existing noise level, regardless of existing noise levels.

Table 3-4. UDOT Noise Abatement Criteria

Activity Category	Leq (h), dBA	Description of Activity Category
A	56 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	66 (Exterior)	Picnic areas, recreations areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, hospitals, and cemeteries
C	71 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above
D	--	Undeveloped lands
E (Interior)	51 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Source: UDOT Noise Abatement Policy (revised December 2007)

Affected Environment

Noise Sensitive Land Uses

The State Street corridor includes the following noise sensitive land uses:

- **Activity Category A:** There are no Activity Category A land uses (for instance an amphitheater) within the project area.
- **Activity Category B (Residential Properties, Parks, Schools, and Churches):** UDOT has defined a level of 66 A-weighted decibels (dBA) to be considered a noise impact for Activity Category B properties.
    - **Residential Properties:** There are a few residential properties interspersed along the corridor, including the Shady Wood Apartments, and a subdivision just west of 1300 West in Pleasant Grove that backs onto the State Street corridor.
    - **Parks:** There are three parks adjacent to the State Street corridor -- Lindon City Center Park, Will's Memorial Park, and Robinson Park.
    - **Schools:** There are two school adjacent to the State Street corridor -- Mountainland Applied Technology College and Headstart at Wills Memorial Park.
    - **Churches:** The Fellowship Bible Church, the Kingdom Hall Jehovah's Witnesses, Calvary Mountain View Church, and the LDS Alpine Tabernacle are located in the project area.

- **Activity Category C:** The majority of State Street is lined with commercial properties. UDOT has defined a level of 71 dBA to be considered a noise impact for these commercial properties.
- **Activity Category D (Undeveloped):** The UDOT Noise Policy states that a noise impact analysis will not be considered for undeveloped lands.
- **Activity Category E (Interior Areas):** Regarding Activity Category E, the UDOT Noise Policy states, "In determining and abating traffic noise impacts, primary consideration will be exterior areas surrounding residential areas or areas of frequent human use that are adjacent to individual properties."

Existing Noise

The primary source of noise in the project area is automobile and truck traffic from State Street. Existing noise levels for each receiver along State Street were calculated using the Traffic Noise Model (TNM) 2.5 software. The calculated noise levels were then used to create existing noise contours (see Figures in Appendix C).

On-site measurements were taken to verify the accuracy of the model (see Table 3-5).

Table 3-5. Existing Noise Levels

Site	Field Measurement Leq* (dBA)	TNM Output Leq* (dBA)
1 (see Figure C-05 in Appendix C)	66	68
2 (see Figure C-05 in Appendix C)	64	67

**Leq = the equivalent or average noise levels, in units of dBA*

Table 3-6 and Appendix C identifies 30 residences and one park and one church along the project corridor currently impacted by a noise level of 66 dBA or higher.

Table 3-6. Existing Noise Impacts

	Residences	Parks/Churches/Schools	Businesses	Total
Noise Impacts	30	1 Park (Robinson Park) 1 Church (LDS Alpine Tabernacle)	0	32

Impacts

No-Action Alternative

Direct Impacts

An increase in traffic on State Street would continue to contribute to study area noise levels (see Appendix C for No-Action Alternative noise contours). Under the No-Action Alternative 60 residences and one park and one church along the project corridor would be impacted by a noise level of 66 dBA or higher, and four businesses would be impacted by a noise level of 71 dBA or higher (see Table 3-7 and Appendix C).

Table 3-7. No-Action Alternative Noise Impacts

	Residences	Parks/Churches/Schools	Businesses	Total
Noise Impacts	60	1 Park (Robinson Park) 1 Church (LDS Alpine Tabernacle)	4	66

Indirect Impacts
There would be no indirect impacts associated with noise as a result of the No-Action Alternative.

Preferred Alternative
Direct Impacts
The Preferred Alternative would widen State Street to a consistent seven-lane cross-section along most of the corridor. Noise level contours for the Preferred Alternative are shown in Appendix C.

Under the Preferred Alternative 81 residences and one park and one church along the project corridor would be impacted by a noise level of 66 dBA or higher, and four businesses would be impacted by a noise level of 71 dBA or higher (see Table 3-8 and Appendix C).

Table 3-8. No-Action Alternative Noise Impacts

	Residences	Parks/Churches/Schools	Businesses	Total
Noise Impacts	81	1 Park (Robinson Park) 1 Church (LDS Alpine Tabernacle)	4	87

Indirect Impacts
There would be no indirect impacts associated with noise as a result of the Preferred Alternative.

Noise Abatement Analysis

According to federal and state policies, specific conditions must be met before traffic noise abatement is implemented as part of the proposed project. Also, noise mitigation must be considered feasible and reasonable. Some of the factors considered when determining if mitigation is feasible and reasonable include, but are not limited, to the following:

- Noise Abatement Benefits: A proposed noise abatement measure is not considered feasible unless noise levels are decreased by a minimum of five dBA for at least 75 percent of front-row receivers.
- Local Issues: Local governments may have ordinances in place that restrict the height of fences and walls along property lines.
- Land Use and Zoning: Noise abatement measures are not usually consistent with commercial or industrial zoning as businesses usually rely on visual exposure from the roadway to attract customers.
- Engineering, Safety, and Maintenance Issues
- Cost of Abatement: The maximum cost used to determine reasonable mitigation is $30,000 per benefited receiver (a benefited receiver is any impacted receiver that gets a noise reduction of five dBA or more as a result of noise abatement).
- Balloting: Public balloting would take place if noise abatement measures appear to meet the criteria outlined in UDOT's Noise Abatement Policy

Under UDOT's Noise Abatement Policy, only Type I projects are eligible for noise abatement measures. Type I projects are projects that involve construction of a highway at a new location or a physical

alteration of an existing highway that substantially alters its alignment or increases the number of travel lanes. The Preferred Alternative is a Type I project and therefore noise abatement is being considered. The types of noise mitigation measures considered for the Preferred Alternative include:

Traffic Management Measures
This mitigation measure includes reducing the speed limit along the proposed roadway. According to the Highway Traffic Noise Analysis and Abatement Policy and Guidance report produced by the FHWA, a reduction in speed of more than 20 mph would be necessary for a noticeable decrease in noise levels. State Street would have a design speed of between 35 mph and 45 mph. A speed limit of between 15 mph and 25 mph would be needed to assure a noticeable decrease in noise levels, which is inconsistent with the roadway classification. This measure is not a viable abatement measure for this project.

Horizontal and/or Vertical Alignment Shifts
As discussed in Chapter 2, alignment concepts were evaluated for the Preferred Alternative. The Preferred Alternative was studied and selected because this alignment met the project purpose and need, as outlined in Chapter 1, and minimizes environmental impacts.

Construction of Berms and Associated Landscaping
Construction of earth berms can be an effective noise abatement measure. Berms would need to be six feet high to be effective, which would require a minimum additional right-of-way width of 36 feet. Vegetation must be extremely dense and at least 100 feet thick, according to FHWA's June 1995 Highway Traffic Noise Analysis and Abatement Policy and Guidance, in order to achieve noticeable noise reduction by itself. The construction of berms and/or landscaping to achieve noise mitigation is not reasonable along the corridor. A large amount of additional right-of-way would be required, substantially increasing the cost and environmental impacts.

Noise Wall Abatement Options
For a sound wall to be effective, it must be high enough and long enough to block the view of the noise source from the receiver's perspective. The Highway Traffic Noise Analysis and Abatement Policy and Guidance states that a good rule of thumb is that the noise barrier should extend four times as far in each direction as the distance from the receiver to the barrier. For instance, if the receiver is 50 feet from the proposed noise barrier, the barrier needs to extend at least 200 feet on either side of the receiver in order to shield the receiver from noise traveling past the ends of the barrier. The UDOT Noise Abatement Policy requires that noise walls achieve at least a five dBA reduction to at least 75 percent of front-row (adjacent) receivers. The UDOT Noise Abatement Policy further states that a value of $30,000 per residence would be applied to determine if noise abatement is cost effective for residential areas. A benefited receiver is any impacted receiver that gets a noise reduction of five dBA or more as a result of noise abatement.

Openings in noise walls for driveway connections or intersecting streets destroy the effectiveness of noise walls. Therefore, homes with direct access onto State Street do not qualify for noise walls. The only impacted residences in the project area that do not have direct access onto State Street are located in the subdivision just west of 1300 West in Pleasant Grove. However, any noise wall proposed for this area would have to be constructed on UDOT's right-of-way between the roadway and the Union Pacific Railroad tracks for maintenance purposes. This placement would reflect the noise from the railroad back into the residential area. Therefore, no noise wall mitigation measures were considered for this area.

Avoidance, Minimization, and/or Mitigation Measures
No mitigation will be required.

3.10 FLOODPLAINS

The Federal Emergency Management Agency (FEMA) designates flood zones according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map or Flood Hazard Boundary. Each zone reflects the severity or type of flooding in the area. A letter was sent to FEMA on May 25, 2007 requesting information on FEMA resources within the State Street corridor. To date, no response has been received. Therefore, Flood Insurance Rate Maps have been used to analyze potential impacts.

Affected Environment
In Lindon, the land directly east of the State Street corridor is designated as Zone A. See Figure 3-7. Areas designated as Zone A are areas in the 100 year floodplain.

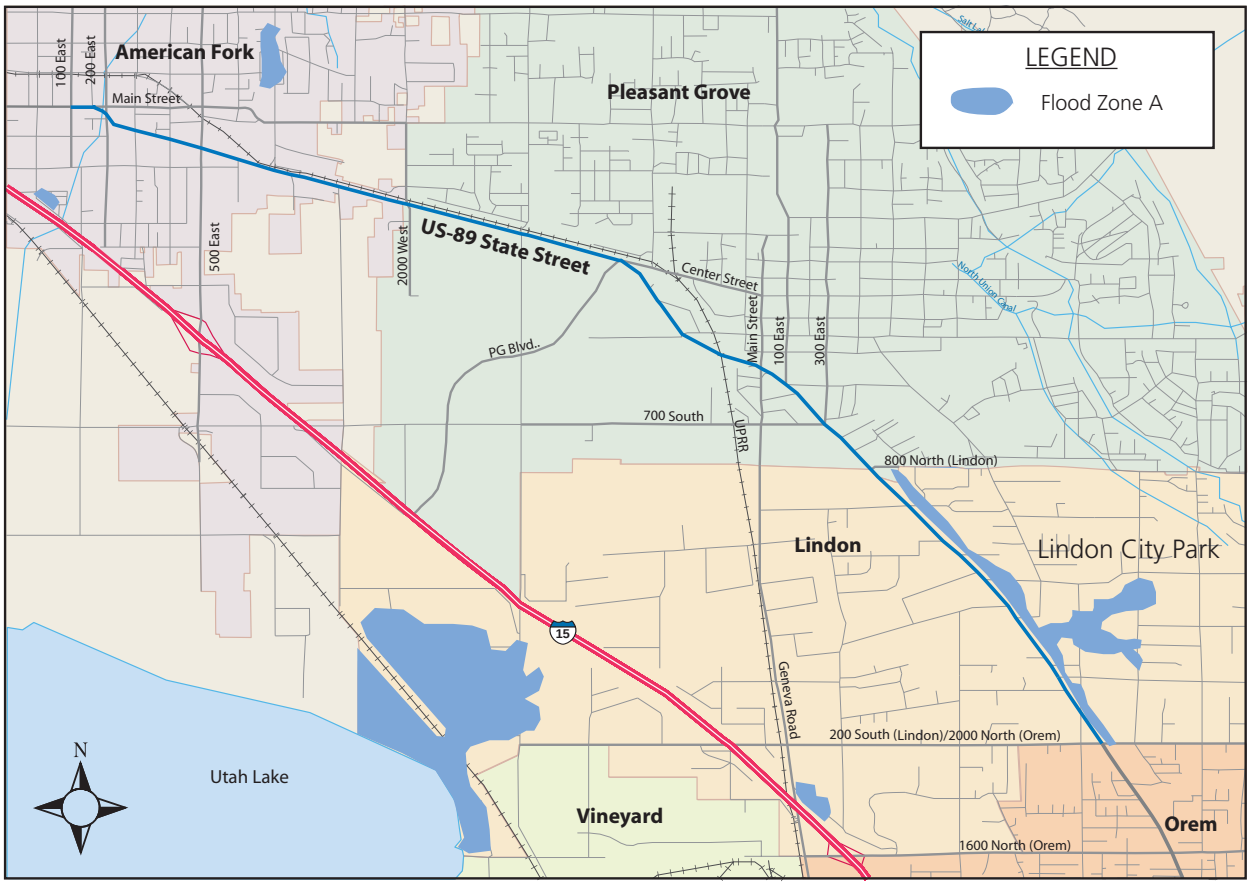


Figure 3-7. Floodplains in Project Area

Impacts
No-Action Alternative
Direct Impacts
The No-Action Alternative would not impact floodplains along the State Street corridor.

Indirect Impacts
The No-Action Alternative would not indirectly impact floodplains along the State Street corridor.

Preferred Alternative
Direct Impacts
The Preferred Alternative would not impact any floodplains along the State Street corridor which are designated as Zone A. Furthermore, there are no streams or associated floodplains which would be impacted by the Preferred Alternative.

Indirect Impacts
The Preferred Alternative would not indirectly impact floodplains along the State Street corridor.

Avoidance, Minimization, and/or Mitigation Measures
No mitigation will be required.

3.11 WATER QUALITY


The Clean Water Act (CWA) regulates the discharge of dredge or fill material into "waters of the U.S." and requires states and Indian tribes to set specific water quality criteria and implement pollution control programs. The EPA is charged with regulating its implementation. The applicable sections of the CWA are Section 401 (Water Quality Certification), Section 402 (National Pollution Discharge Elimination System), and Section 404 (Permit for Placing Fill in Waters of the U.S.).

Affected Environment
Surface Water
The surface water resources in the vicinity of the State Street corridor project area include a river, creeks, springs, and man-made ponds. None of the historic surface drainages in the area presently have uninterrupted flows from their source in the nearby Wasatch Mountains (east and north of the project area) to their natural discharge into Utah Lake (west and south of the project area). All of these natural drainages have been diverted into man-made ponds, ditches, canals, and underground pipes for use in irrigation. Some of these irrigation system ditches are linked to (and are recipients from) municipal storm water systems.

There are three principal natural drainages in the State Street corridor project area, the American Fork River, Grove Creek, and Battle Creek. The majority of the American Fork River flow is diverted for irrigation use near the mouth of American Fork Canyon. Storm flows and spring runoff are captured in a debris basin in the same area. Within the project area, the American Fork River has intermittent flow which is routed into an extensive underground culvert where it crosses under State Street near 200 West in American Fork. Grove Creek and Battle Creek essentially end in debris basins constructed on the benches near the mouths of their respective canyons east of the project area.

Over the years, many of the springs along the State Street corridor have been incorporated into municipal or privately owned irrigation systems that capture the water and contain it within ponds, piping and/or ditches for delivery to end users. The Hollow Water Irrigation System is a series of privately owned irrigation pipes and ditches which carries water from springs located in the vicinity of 200 East and Center Street in Lindon. It was formed in the early 1940's and currently provides irrigation water to approximately 35 shareholders. The system crosses under State Street at approximately 200

North and 300 North in Lindon, and carries water underneath the sidewalk on the west side of State Street from approximately 300 North to 500 North. At this point the Lindon storm water system enters the Hollow Water Irrigation System where it is routed southwest in an open ditch towards Utah Lake.

Ground Water

Groundwater is the primary source of drinking water in northern Utah County, coming from municipal wells and springs. It is a natural resource of vital importance to the increasing population of Utah County and to the population served by the proposed State Street corridor. No municipal wells or springs used for drinking water are located within the State Street corridor.

Storm Drain

State Street presently has inconsistent storm drain systems throughout the corridor. In areas without a storm drain system, storm water sheet flows off of State Street into nearby surface waters or infiltrates into the ground. In general, areas with storm drain systems capture storm water runoff from roads and convey it to a discharge point, either through catch basins and/or detention ponds. These systems can be effective at reducing total suspended solids (TSS), if storm water is conveyed to a detention pond with discharge control devices prior to storm water entering surface waters. Discharge control devices regulate the flow exiting a detention pond, thus slowing storm water and allowing sufficient time for suspended solids to fall from the flow. The existing storm drain systems along the State Street corridor primarily capture flows and deposit them into pipe systems and open ditches with little or no detention.

Storm water from roadways can negatively impact water quality by increasing the total dissolved solids (TDS) and TSS entering nearby streams and lakes. Roadway surfaces accumulate automobile related pollutants (mainly lead, copper, zinc, oil, grease, and rust) and de-icing chemicals (salt and salt solutions), which are then washed off the roadway surfaces from rain or snowmelt. Unmanaged runoff can become concentrated, gather sediment through erosion, and enter streams and lakes unless measures are taken to reduce pollutants.

Impacts

No-Action Alternative

Direct Impacts

Under the No-Action Alternative, drainage conditions in the project area would remain the same. Storm water would continue to flow through the existing storm drain systems in areas where they are present, and where they are not, storm water would continue to infiltrate into the ground. It is likely that unmanaged and undetained storm water would decrease water quality.

Indirect Impacts

It is reasonably foreseeable that unmanaged and undetained storm water, under the No-Action Alternative, would decrease water quality later in time or farther removed in distance (i.e., Utah Lake).

Preferred Alternative

Direct Impacts

The Preferred Alternative would increase the impervious area from 60 acres to 76 acres. This increase in impervious area would raise the 10-year peak flow, on average, 4.7 cfs along the State Street corridor. Storm water runoff along the State Street corridor would be collected in curbs and gutters and enter a new storm drain system via catch basins. A system of inlets and pipes would convey

the storm water to discharge points and detention facilities that would aid in lowering peak flows to near existing conditions. These detention facilities would improve water quality through oil/grease separation and sediment removal and would be designed to meet the requirements of the Utah Division of Water Quality (UDWQ).

Figure 3-8 and Table 3-9 show the general direction of storm water flow and conceptual plans for managing the storm water.

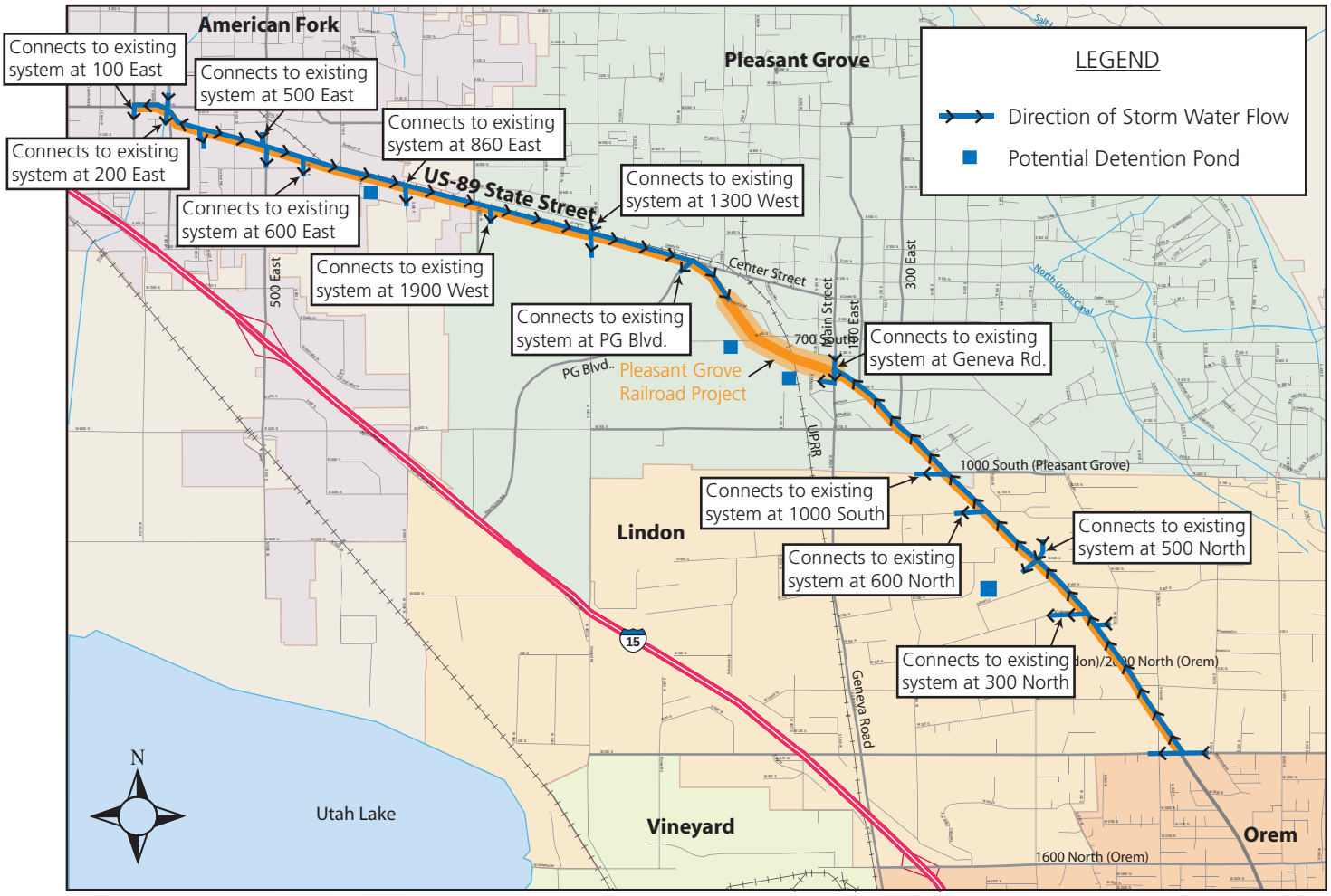


Figure 3-8. Future Storm Water Drainage System

Table 3-9. Drainage Summary

Location		Description of Drainage
From	To	
2000 North (Orem)	300 North (Lindon)	Storm water would be diverted at 300 North in Lindon and tie into an existing 30" pipe flowing west from State Street.
300 North (Lindon)	500 North (Lindon)	Storm water would be diverted at 500 North in Lindon and tie into an existing 42" pipe flowing in a southwesterly direction, which opens into an open ditch. Additional capacity would need to be added to this system. A potential detention pond may be located near Gillman Lane or Lakeview Drive.
500 North (Lindon)	600 North (Lindon)	Storm water would be diverted into an existing 36" pipe, which opens into an open ditch.
600 North	1000 South (P.G.)	Storm water would be diverted west at 1000 South into an open channel that turns into an 18" pipe.
1000 South (P.G.)	Geneva Road (P.G.)	Storm water would be diverted at Geneva Road to Hale Drive into an open channel. A potential detention pond may be located south of State Street, just west of the railroad tracks.
Geneva Road (P.G.)	Industrial Drive (P.G.)	Storm water collected is part of the Pleasant Grove Railroad Bridge (2005) project.
Industrial Drive (P.G.)	Pleasant Grove Blvd. (P.G.)	Water would flow south, back towards the railroad bridge. This water would tie into the Pleasant Grove Railroad Bridge (2005) Project. A potential detention pond may be located on the south side of 220 South to detain storm water before flowing into an existing open ditch on 700 South.
Pleasant Grove Blvd. (P.G.)	1300 West (P.G.)	Storm water would be diverted at Pleasant Grove Boulevard into a 42" pipe that turns into an open ditch.
1300 West (P.G.)	1900 West (P.G.)	Storm water would be diverted at 1300 West into a 42"pipe which turns into a 48" pipe.
1900 West (P.G.)	860 East (A.F.)	Storm water would be diverted into an open channel at 1900 West.
860 East (A.F.)	600 East (A.F.)	Storm water would be diverted into an existing storm drain system at 860 East. A potential detention pond may be located at approximately 760 East on the south side of State Street.
600 East (A.F.)	500 East (A.F.)	Storm water would be diverted into an existing storm drain system at 600 East.

Location		Description of Drainage
From	To	
500 East (A.F.)	300 East (A.F.)	Storm water would be diverted into an existing storm drain system at 500 East.
300 East (A.F.)	200 East (A.F.)	Storm water would be diverted at 200 East into an existing system at the American Fork River Main Outfall
300 East (A.F.)	100 East (A.F.)	Storm water would be diverted into an existing storm drain system at 100 East.

Indirect Impacts
Under the Preferred Alternative, water quality would not be adversely affected with the implementation of a new storm drain system that would comply with current Utah Department of Environmental Quality (UDEQ) and Utah Department of Water Quality (UDWQ) standards. UDWQ has identified the primary contaminants of concern from storm water runoff to include: TDS, sediments, and inorganics. Other potential contaminants include heavy metals, asbestos, and hydrocarbons.

Avoidance, Minimization, and/or Mitigation Measures
To minimize storm water impacts to receiving waters, the following will be implemented:

- A new storm drain system will be constructed that will comply with current UDEQ and UDWQ standards.
- A Storm Water Pollution Prevention Plan (SWPPP) will be developed and incorporated into the final design plans of the project, and a Notice of Intent (NOI) form will be submitted to the UDWQ prior to construction of the project.
- Short-term impacts to water quality will be minimized through implementation of UDOT's Best Management Practices (BMPs), found in the Temporary Erosion and Sediment Control Manual (February 2003).

3.12 WETLANDS

Under Section 404 of the Clean Water Act, the United States Army Corps of Engineers (USACE) regulates placement of dredged or fill material that impacts waters of the United States, including jurisdictional wetlands.

Affected Environment
Parallel to the State Street corridor there is a roadside ditch approximately 5-ft by 700-ft (.08 acres) located on the south side of the roadway between 1600 West and 1800 West State Street (see Figure 3-9). The vegetation in the ditch is dominated by broad-leaf cattail (Typha latifolia) and reed canarygrass (Phalaris arundinacea). The hydrology is driven by redirected water associated with irrigation systems and storm water runoff. It is connected to a system of irrigation ditches which provide water to areas south of State Street and are hydrologically connected with Utah Lake. The ditch is not identified on the National Wetlands Inventory Map.

Beyond the State Street corridor there is a wet meadow in the northeast quadrant of the 1300 West and State Street intersection, north of the railroad tracks, in Pleasant Grove (see Figure 3-9). The vegetation in the meadow is dominated by broad-leaf cattail (Typha latifolia), hardstem bulrush (Scirpus acutus), Olney's threesquare (Scirpus americanus), and few-flower spike rush (Eleocharis

pauciflora). The hydrology is driven by nearby springs and sheetflow, and is further maintained by the impounding effects of the railroad on the south. Additionally, the U.S. Fish and Wildlife Service's National Wetlands Inventory map designates the area as, "palustrine, emergent marsh, seasonally flooded."

Figure 3-9. Wetlands in Project Area

Impacts

No-Action Alternative

Direct Impacts

The No-Action Alternative would not directly impact wetlands or waters of the United States.

Indirect Impacts

The No-Action Alternative would not indirectly impact wetlands or waters of the United States.

Preferred Alternative

Direct Impacts

The Preferred Alternative would impact the roadside ditch. It would require that the ditch be channelized into an appropriate size pipe and culvert system and then filled. Accordingly, this would result in the loss of approximately 0.08 acres of wetlands.

Indirect Impacts

The Preferred Alternative would not indirectly impact wetlands or waters of the United States.

Avoidance, Minimization, and/or Mitigation Measures

Due to the railroad north of State Street, avoidance of the roadside ditch is not feasible or practical. Mitigation for the wetland impacts associated with the Preferred Alternative will be determined during the permit process with the USACE. It is anticipated that the Preferred Alternative will be authorized under Nationwide Permit 14 (Linear Transportation Projects), in accordance with Section 404 of the Clean Water Act.

3.13 WILDLIFE

Impacts of the proposed project were assessed in accordance with the Utah wildlife species of concern (Utah Administrative Rule R657-48) and State of Utah conservation agreement species.

Affected Environment

The State Street corridor is located in an urban setting and has no known state-sensitive species, important wildlife habitat, big game migration routes, habitat connectivity, or fish passage.

Impacts

No-Action Alternative

Direct Impacts

The No-Action Alternative would not directly impact state wildlife resources.

Indirect Impacts

The No-Action Alternative would not indirectly impact state wildlife resources.

Preferred Alternative

Direct Impacts

Paul W. West, UDOT Wildlife Biologist, evaluated the State Street corridor project with regard to wildlife issues using the Utah Division of Wildlife database, UDOT's Traffic and Safety data, and UDOT's Wildlife Connectivity database. Based on his evaluation he determined that the State Street corridor project would have no effect on state-sensitive species, important wildlife habitat, big game migration routes, habitat connectivity, or fish passage (see October 11, 2007 memo in Appendix D).

Indirect Impacts

The Preferred Alternative would not indirectly impact state wildlife resources.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation will be required.

3.14 THREATENED AND ENDANGERED SPECIES

Impacts of the proposed project on threatened and endangered species were assessed in accordance with the Endangered Species Act (ESA) of 1973 (7 U.S.C. 136, 16 U.S.C. 1531 et seq.), as amended. The ESA provides protection to federally listed threatened and endangered species and their designated critical habitats.

Affected Environment

The State Street corridor has no known federally-listed threatened or endangered species, or critical habitat protected under the ESA.

Impacts

No-Action Alternative

Direct Impacts

The No-Action Alternative would not directly impact federally-listed species or critical habitat protected under the ESA.

Indirect Impacts
The No-Action Alternative would not indirectly impact federally-listed species or critical habitat protected under the ESA.

Preferred Alternative
Direct Impacts
A review of the Utah Division of Wildlife Resources database by Paul W. West, UDOT Wildlife Biologist, revealed that no federally-listed threatened, endangered, or candidate species; or any critical habitat would be affected by this project (see October 11, 2007 memo in Appendix D), resulting in a "no-effect" ESA determination. In accordance with the U.S. Fish and Wildlife Service (USFWS) memo dated January 27, 2006, the USFWS no longer concurs on "no-effect" determinations. Therefore, the Preferred Alternative would not directly impact federally-listed species or critical habitat protected under the ESA.

Indirect Impacts
The Preferred Alternative would not indirectly impact federally-listed species or critical habitat protected under the ESA.

Avoidance, Minimization, and/or Mitigation Measures
No mitigation will be required.

3.15 INVASIVE SPECIES

Executive Order 13112 directs federal agencies to expand and coordinate their efforts to combat the introduction and spread of plants and animals not native to the United States. Also, the Utah Noxious Weed Act identifies species of concern and requires each county to formulate and implement a noxious weed control program.

Affected Environment
Non-native plants and animals can cause substantial changes to ecosystems, upset ecological balance, and cause economic harm to our nation's agricultural and recreational sectors. Since roadway corridors provide opportunities for the movement of invasive species through the landscape, it is important that roadway projects include measures to combat the introduction and spread of invasive species.

Impacts
No-Action Alternative
Direct Impacts
The No-Action Alternative would not provide direct opportunities for movement of invasive species along the State Street corridor.

Indirect Impacts
The No-Action Alternative would not indirectly provide opportunities for movement of invasive species along the State Street corridor.

Preferred Alternative

Direct Impacts

The Preferred Alternative includes highway construction and would provide opportunities for the movement of invasive species along the State Street corridor.

Indirect Impacts

There would be no indirect impacts associated with invasive species as a result of the Preferred Alternative.

Avoidance, Minimization, and/or Mitigation Measures

To minimize the movement of invasive species, the Contractor will be required to comply with UDOT's Special Provision 02926S - Invasive Weed Control to minimize the spread and introduction of invasive species. Some of the measures in the Special Provision include:

- Cleaning all earth-moving equipment entering the project area
- Treating existing noxious weeds ten days before starting earthwork operations
- Controlling invasive weeds using pre-emergent, selective, and non-selective herbicides, as appropriate

3.16 HISTORIC AND ARCHAEOLOGICAL RESOURCES

In accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and its implementing regulations found in 36 CFR 800, the State Street project area has been inventoried for cultural resources.

The term historic property is used throughout this section. The Advisory Council on Historic Preservation (ACHP) defines the term historic property as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP)." The term includes artifacts, records, and remains that are related to and located within such properties. The term also includes properties of traditional religious and cultural importance to Native American tribes that meet the National Register criteria. The term eligible for inclusion in the National Register includes both properties formally determined as such and all other properties that meet the National Register criteria.

To identify cultural resources, surveys have been completed within the project area and include:

- Selective Reconnaissance Survey, Lindon, Pleasant Grove, and American Fork, Utah, prepared by Nancy Calkins, Historic Preservation Consultant, December 2007. The Selective Reconnaissance Level Survey (RLS) included an area from 2000 North in Orem (200 South in Lindon) along State Street to 100 East in American Fork.
- Archaeological and Cultural Inventory of the Proposed US-89 Project (2000 North Orem to 100 East American Fork) Project, prepared by Earthtouch, Inc. December 2007.

The Determination of Eligibility and Finding of Effect (DOEFOE) outlines the eligibility determination and the type of effect resulting from implementation of the Preferred Alternative for all cultural properties along State Street from 2000 North in Orem to 100 East in American Fork. All historic properties which bordered State Street or were on cross-streets within 300 feet of major intersections were included (see DOEFOE in Appendix D). This area was included in the DOEFOE because it would be directly and indirectly impacted by the Preferred Alternative.

Affected Environment

To be eligible for the NRHP, a historic property must qualify under one of the NRHP eligibility criteria, as defined in 36 CFR 60.4 and shown in Table 3-10.

Table 3-10. NRHP Criteria for Evaluation

NRHP Criterion	Characteristics
A	Associated with events that have made a significant contribution to the broad patterns of our history
B	Associated with the lives of persons significant in our past
C	Embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction.
D	Yielded, or may likely to yield, information important in prehistory or history

Selective Reconnaissance Level Survey for Historic Structures

A Reconnaissance Level Survey (RLS) was conducted for the State Street corridor, which evaluated historic structures within the project area. This survey included structures only from the historic period (constructed in or prior to 1962). A total of 72 properties were surveyed, 21 in Lindon, 23 in Pleasant Grove, and 28 in American Fork within the State Street corridor project area (see DOEFOE in Appendix D for descriptions of all properties surveyed within the project area). The RLS evaluated properties based on the Utah State Historic Preservation Office (SHPO) Ratings shown in Table 3-11.

Table 3-11. Utah SHPO Rating Definitions for Historic Structures

SHPO Rating	Characteristics
A	**Eligible/Significant:** Built within the historic period and retains integrity; excellent example of a style or type; unaltered or only minor alterations or additions; individually eligible for NRHP under Criterion C; also, buildings of know historical significance.
B	**Eligible:** Built within a historic period and retains integrity; good example of a style or type, but not as well-preserved or well-executed as "A" buildings; more substantial alterations or additions than "A" buildings, though overall integrity is retained; eligible for NRHP as part of a potential historic district or primarily for historical rather than architectural reasons (which cannot be determined at this point).
C	**Ineligible:** Built during the historic period but has had major alterations or additions; no longer retains integrity.
D	**Ineligible:** Out-of-period; built during the modern era.

Forty properties within the project area are eligible for the NRHP (see Table 3-12 and Figures 3-10 through 3-12).

Table 3-12. Results of the RLS

Address	Photo of Structure	Date (ca.)	Style	SHPO Rating	NRHP Criterion
Lindon					
140 South State Street		1950	Ranch/Rambler	B	A
60 South State Street		1875	Victorian Eclectic Post-WWII: Other	B	A
30 South State Street		1950	Early Ranch	A	A & C
70 North State Street		1950	20th Century Commercial	B	A
395 North State Street		1880	Victorian Eclectic Vernacular	B	A
410 North State Street		1890	Vernacular Victorian Eclectic	B	A
455 North State Street		1920	Bungalow	B	A
? 460 North State Street		1950	20th Century Commercial	B	A
540 North State Street		1900	Other/Unclear Style	B	A
550 North State Street		1950	Early Ranch	B	A
143 West Harcliff Circle		1955	Ranch/Rambler	A	A & C
Pleasant Grove					
915 South State Street		1920	Bungalow	A	A & C

Address	Photo of Structure	Date (ca.)	Style	SHPO Rating	NRHP Criterion
411 East State Street		1950	Colonial Re viva Ranch/Rambler	A	A & C
319 East State Street		1940	Minimal Traditional	B	A
200 East State Street Interurban RR Station		1915	Other/Unclear Style	B	A
125 East State Street		1950	20th Century Commercial	B	A
?1200 West State Street		1870	Classical: Other Victorian Eclectic	B	A
?1305 West State Street		1950	Post-WWII: Other	B	A
?1500 West State Street		1870	Classical: Other	B	A
691 South 300 East		1909	Bungalow Clipped Gable	B	A
385 South Main Street		1950	20th Century Commercial	B	A
379 South Main Street		1950	20th Century Commercial	B	A
American Fork					
1080 East State Street		1950	Ranch/Rambler	B	A
1054 East State Street		1920	Bungalow	B	A
985 East State Street		1920	Victorian Eclectic Bungalow	B	A
970 East State Street		1900	Early Ranch	B	A

Address	Photo of Structure	Date (ca.)	Style	SHPO Rating	NRHP Criterion
615 East State Street		1945	Mission 20th Century Commercial	B	A
?495 East State Street		1950	Late 20th Century: Other	B	A
433 East State Street		1950	20th Century Commercial	B	A
351 East State Street		1953	20th Century Commercial	B	A
339 East State Street		1891	Victorian Eclectic Bungalow	A	A & C
275 East State Street		1930	20th Century Commercial	B	A
270 East State Street		1900	Other/Unclear Style	B	A
250 East State Street		1900	20th Century: Other	B	A
236 East State Street		1880	Classical: Other Bungalow	A	A & C
202 East State Street		1927	Other/Unclear Style	B	A
110 East Main Street Alpine Stake Tabernacle		1909	2nd Renaissance Revival Victorian Eclectic	A	A & C
42 East Main Street		1911	Arts & Crafts Bungalow	A	A & C
62 South 500 East		1885	Victorian Eclectic	B	A
15 North 100 East		1945	Period Revival: Other Minimal Traditional	B	A

ELIGIBLE/IMPORTANT HISTORIC STRUCTURE BUILT WITHIN THE HISTORIC PERIOD AND RETAINS INTEGRITY

INELIGIBLE HISTORIC STRUCTURE BUILT WITHIN THE HISTORIC PERIOD BUT HAS HAD MAJOR ALTERATIONS OR ADDITIONS; NO LONGER RETAINS INTEGRITY

Figure 3-10
HISTORIC STRUCTURES

ELIGIBLE/IMPORTANT HISTORIC STRUCTURE BUILT WITHIN THE HISTORIC PERIOD AND RETAINS INTEGRITY

INELIGIBLE HISTORIC STRUCTURE BUILT WITHIN THE HISTORIC PERIOD BUT HAS HAD MAJOR ALTERATIONS OR ADDITIONS; NO LONGER RETAINS INTEGRITY

Figure 3-11
HISTORIC STRUCTURES

ELIGIBLE/IMPORTANT HISTORIC STRUCTURE BUILT WITHIN THE HISTORIC PERIOD AND RETAINS INTEGRITY

INELIGIBLE HISTORIC STRUCTURE BUILT WITHIN THE HISTORIC PERIOD BUT HAS HAD MAJOR ALTERATIONS OR ADDITIONS; NO LONGER RETAINS INTEGRITY

Figure 3-12
HISTORIC STRUCTURES

Historic boundaries were determined for all eligible properties in the project area. The boundaries of historic properties are drawn to include the elements that contribute to its setting, feeling, and/or association, such as outbuildings, landscape and natural features, undeveloped farmland associated with agricultural properties, etc. In urban and suburban areas, the boundary may be limited to the legally recorded parcel number or lot lines when those parcels retain their historic boundaries and integrity.

This definition is based on information contained in two National Register Bulletins:

- National Register Bulletin 16A (page 56) suggests that for urban and suburban properties, the legally recorded parcel number or lot lines are appropriate when those parcels retain their historic boundaries and integrity.
- National Register Bulletin 21 (page 3) states "Boundaries should include surrounding land that contributes to the significance of the resources by functioning as the setting . . . .For example, do not limit the property to the footprint of the building, but include its yards or grounds."

Archaeological and Cultural Inventory

EarthTouch, Inc. conducted an archaeological field inventory and a cultural resource inventory in the project area. The objectives of the inventory were to locate, document, and evaluate cultural and archaeological resources occurring within the State Street corridor to attain compliance with historic preservation laws and regulations, including the NHPA of 1966 (as amended). The inventory did not find any archaeological sites within the project area, but discovered three previously recorded cultural sites (the Union Pacific Railroad, the Pleasant Grove Underpass, and the Lindon Ditch), and one new cultural resource site (an unnamed irrigation ditch) which is ineligible for the NRHP. See Table 3-13 for cultural sites located within the project area.

Table 3-13. Cultural Sites in Project Area

Cultural Site	Location	Photo	Eligibility for NRHP
Union Pacific Railroad	Parallels State Street in areas of Pleasant Grove and American Fork		**Eligible** under Criterion A
Pleasant Grove Bridge*	Carries the Union Pacific Railroad over State Street in Pleasant Grove		**Eligible** under Criterion A and Criterion C
Lindon Ditch	Parallels the east side of State Street in Lindon		**Ineligible** due to loss of original historic integrity
Unnamed Ditch Segment	Located on the west side of State Street in front of 236 East State Street in American Fork		**Ineligible** due to modification of the ditch to a piped system

*It should be noted that impacts to the Pleasant Grove Bridge were identified and assessed as part of the Environmental Assessment and Section 4(f) Evaluation for the State Street Railroad Bridge, Pleasant Grove project.

Paleontological Resources

The Utah Department of Natural Resources, Utah Geological Survey, has conducted a paleontological file search within the State Street corridor project area and has indicated that there are no recorded paleontological sites (see letter dated August 27, 2007 in Appendix D). As stated in the Utah Geological Survey letter, "Quaternary alluvial deposits that are exposed here have a low potential for yielding significant fossil localities."

Consultation

Native American consultation was initiated by sending letters requesting information on any historic properties of traditional religious and/or cultural importance and notification of interest in being a consulting party on the project (see November 19, 2007 letter to Native American Tribes in Appendix D). Letters were sent to the Northwestern Band of the Shoshone Nation, Uinta and Ouray Utes, Skull Valley Goshiutes, Ibapah Goshiutes, and the Fort Hall Business Council. The Skull Valley Band of Goshiutes replied to the letter (personal communication with Jason Bright, UDOT) and stated that they don't have, or aren't aware of, any concerns in the State Street project area.

Impacts

Impacts to cultural resources are categorized as No Historic Properties Affected, No Adverse Effect, and Adverse Effect (as defined in 36 CFR 800.5). 36 CFR 800.16 (i) states that "effect means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register."

A finding of **No Historic Properties Affected** occurs either when no historic properties are present or historic properties are present but the project would have no effect upon them, as defined in 36 CFR 800.

A finding of **No Adverse Effect** occurs when the undertaking's effects do not meet the criteria of 36 CFR 800 for Adverse Effect or the undertaking is modified or conditions are imposed to avoid adverse effects. This type of impact occurs when the alternative impacts a historic property but does not completely alter the characteristics that qualify it for eligibility for the National Register.

An **Adverse Effect**, as defined in 36 CFR 800, occurs when a project may alter, directly or indirectly, any of the qualifying characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Examples of an Adverse Effect include complete use of historic structures for the road improvements, access restrictions, large percentage of property used for road right-of-way, and relocations of the residence due to closeness of the roadway.

No-Action Alternative

Direct Impacts

The No-Action Alternative would not directly affect cultural properties within the State Street corridor.

Indirect Impacts

The No-Action Alternative would not indirectly affect cultural properties within the State Street corridor.

Preferred Alternative

Direct Impacts

UDOT determines the types of effects for each historic property within the project area. A DOEFOE was prepared by UDOT, and was agreed to by SHPO (see DOEFOE dated ---- in Appendix D). The DOEFOE outlines the eligibility determinations and the type of effect discussed above for each historic property within the project area resulting from implementation of the Preferred Alternative.

There would be a No Adverse Effect on nine properties due to minor right-of-way acquisition (see Table 3-14 and Figure 3-13). There would be a No Historic Properties Affected determination for all other historic properties and cultural resources.

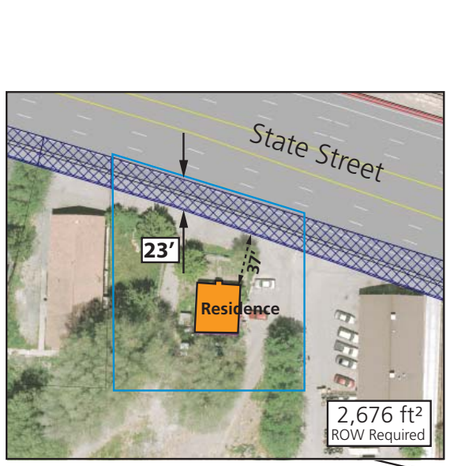
Table 3-14. Impacts of Preferred Alternative on Cultural Resources

Address	Photo of Structure	SHPO Rating	Preferred Alternative	
			Effect Determination (Section 106)	Type of Impact to Property
Lindon				
60 South State Street		B	No Adverse Effect	1-ft strip acquisition from front of property; no impact to historic structure
143 West Harcliff Circle		A	No Adverse Effect	3-ft strip acquisition from front of property; no impact to historic structure
Pleasant Grove				
200 East State Street Interurban RR Station		B	No Adverse Effect	5-ft strip acquisition from front of property; no impact to historic structure
?1305 West State Street		B	No Adverse Effect	44-ft strip acquisition from front of property; no impact to historic structure
?1500 West State Street		B	No Adverse Effect	17-ft strip acquisition from front of property; no impact to historic structure
American Fork				
1080 East State Street		B	No Adverse Effect	33-ft strip acquisition from front of property; no impact to historic structure
1054 East State Street		B	No Adverse Effect	26-ft strip acquisition from front of property; no impact to historic structure
970 East State Street		B	No Adverse Effect	23-ft strip acquisition from front of property; no impact to historic structure
?495 East State Street		B	No Adverse Effect	21-ft strip acquisition from side of property; no impact to historic structure

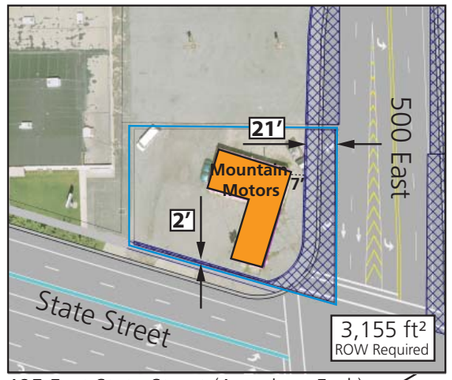
Indirect Impacts
The Preferred Alternative would not indirectly impact cultural properties within the project area.

Avoidance, Minimization, and/or Mitigation Measures

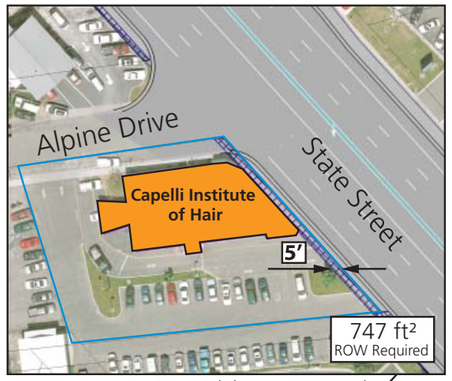
No mitigation will be required.



970 East State Street (American Fork)

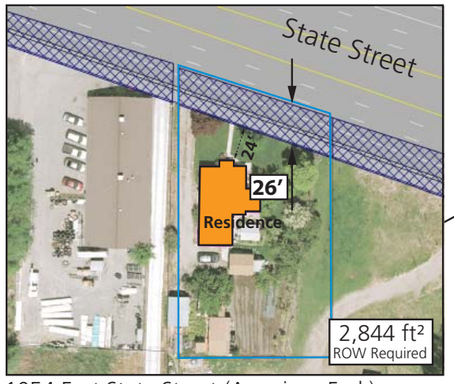


495 East State Street (American Fork)

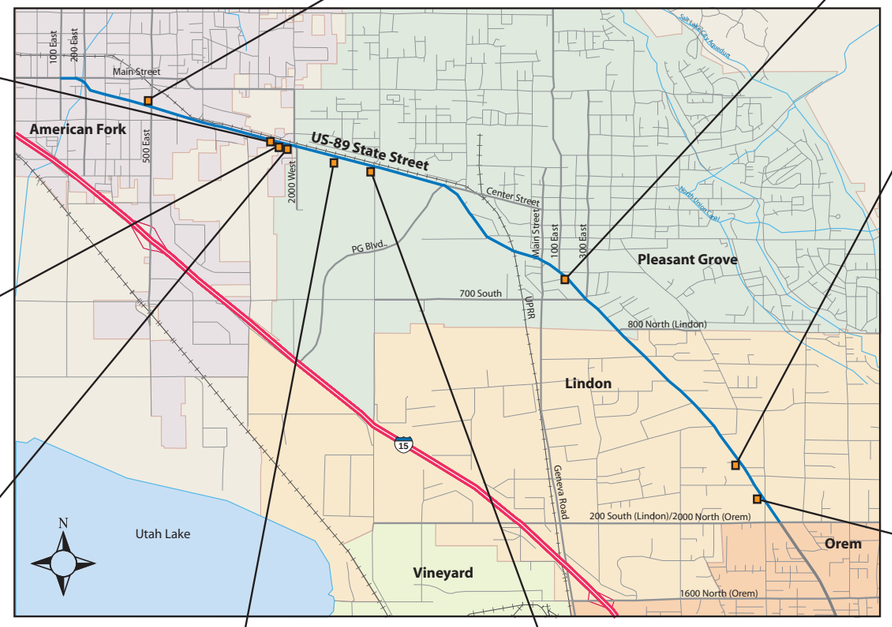


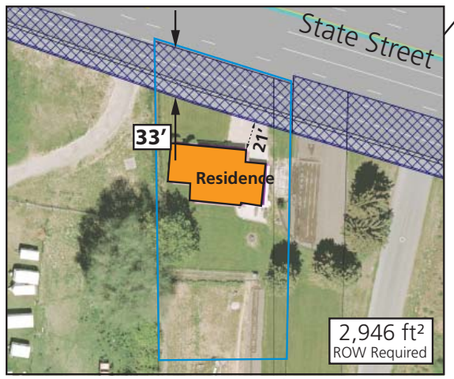
200 East State Street (Pleasant Grove)

143 West Harcliff Circle (Lindon)

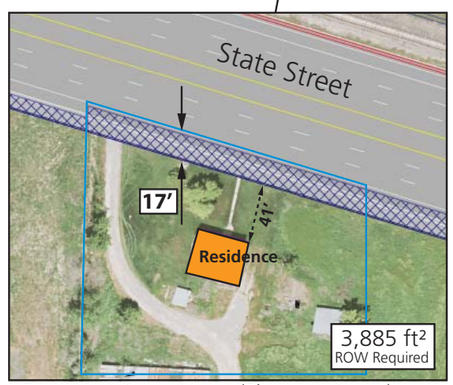


1054 East State Street (American Fork)

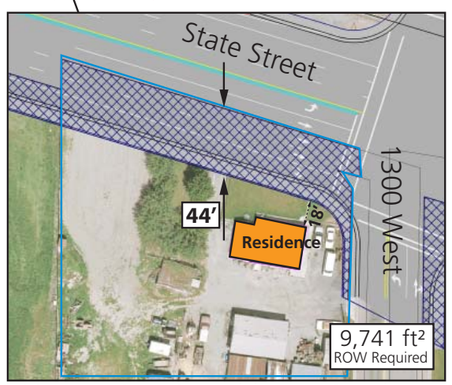




1080 East State Street (American Fork)



1500 West State Street (Pleasant Grove)



1305 West State Street (Pleasant Grove)

60 South State Street (Lindon)

LEGEND

- Historic Structure
- Potential Right-of-Way Acquisition
- Historic Boundary

Figure 3-13. Impacts to Historic Properties

3.17 HAZARDOUS WASTE SITES

Affected Environment

A search of the Comprehensive Emergency Response, Compensation, and Liability Information System (CERCLIS) database revealed no Superfund sites within or adjacent to the State Street corridor. The Resource Conservation and Recovery Act (RCRA) regulates underground storage tanks (UST) and leaking underground storage tanks (LUST) sites. A search of the Utah Division of Environmental Response and Remediation (DERR) database identified two properties within the project area with LUSTs that have yet to be closed. Table 3-15 shows the identified LUSTs.

Table 3-15. Leaking Underground Storage Tanks

Location Name	Address	DERR Id No.	Notification Date
Maverick #318	341 East State Street Pleasant Grove	1000053	12/18/96 and 5/19/00
Quick Fix Inc.	690 West State Street Pleasant Grove	1000399	6/10/03 and 11/10/04

Source: http://www.environmentalresponse.utah.gov

Impacts

No-Action Alternative

Direct Impacts

The No-Action Alternative would not directly impact hazardous waste sites along the State Street corridor.

Indirect Impacts

The No-Action Alternative would not indirectly impact hazardous waste sites along the State Street corridor.

Preferred Alternative

Direct Impacts

The Preferred Alternative would not directly impact hazardous waste sites along the State Street corridor as they are likely outside of the proposed roadway right-of-way limits.

Indirect Impacts

The Preferred Alternative would not indirectly impact hazardous waste sites along the State Street corridor.

Avoidance, Minimization, and/or Mitigation Measures

If hazardous waste material is encountered during construction, mitigation will be performed in accordance with UDOT Standard Specification 01355, which directs the Contractor to stop work and notify the Project Engineer of any discovery of hazardous material. Disposition of hazardous material would then take place under guidelines set by the UDEQ.

3.18 VISUAL CONDITIONS

Affected Environment

The visual conditions of the State Street corridor are consistent with a transportation facility that has transitioned from a rural highway responsible for statewide north-south travel (prior to the construction of I-15) to a suburban roadway which bisects several rapidly growing communities. Adjacent properties are dominated by an assortment of old and new commercial developments which vary in size, business type, and location in proximity to existing State Street. Interspersed among the commercial developments are public and recreational facilities, individual and multi-family residences, and agricultural fields. In addition, the Union Pacific Railroad line is located on the north side of State Street between Pleasant Grove Boulevard/Main Street in Pleasant Grove and 700 East in American Fork, and has prevented any roadside development along that section of the corridor.

Commercial Development

Robinson Park, American Fork

Union Pacific Railroad

Impacts

No-Action Alternative

Direct Impacts

The No-Action Alternative would not impact the visual conditions of the State Street corridor. Undeveloped land would continue to transition into commercial and residential use in accordance with approved land use master plans and zoning maps.

Indirect Impacts

The No-Action Alternative would not indirectly impact the visual conditions of the State Street corridor.

Preferred Alternative

Direct Impacts

The Preferred Alternative would not impact the visual conditions of the State Street corridor. The Preferred Alternative would build a facility that is visually consistent with the existing and planned conditions associated with a corridor dominated by commercial development.

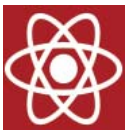
Indirect Impacts

The Preferred Alternative would not indirectly impact the visual conditions of the State Street corridor.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation is required.

3.19 ENERGY



Impacts

No-Action Alternative

The No-Action Alternative would not have additional energy requirements due to construction. However, energy expenditure may increase over the long term due to operational energy requirements.

Preferred Alternative

Direct Impacts

The Preferred Alternative would require the expenditure of energy for the construction of the roadway. However, savings in operational energy requirements (i.e., reduction in consumption due to a decrease in traffic congestion/travel time) may offset construction energy requirements, and in the long term, result in a net savings in energy usage.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation will be required.

3.20 CONSTRUCTION IMPACTS

Impacts

No-Action Alternative

Direct Impacts

There would be no direct construction impacts from the implementation of the No-Action Alternative.

Indirect Impacts

There would be no indirect construction impacts from the implementation of the No-Action Alternative.

Preferred Alternative

Direct Impacts

Social Conditions

Area residents and other people using the State Street corridor would experience minor, temporary inconveniences due to noise, dust, and travel delays. Access closures for residences would be minimal -- it may be necessary to close an access for a few hours when grading or paving occurs in front of a driveway.

Economics

Businesses along the State Street corridor may experience a temporary reduction in customers as a result of congestion and the associated avoidance of State Street during construction of the Preferred Alternative.

Pedestrian and Bicycle Considerations

Pedestrians and bicyclists using the State Street corridor would be directly affected by construction impacts of the Preferred Alternative due to the temporary closure and reconstruction of sidewalks and shoulders.

Air Quality
Construction of the Preferred Alternative would result in temporary negative effects to air quality in the project area due to increased dust and particulates.

Noise
Construction noise impacts are considered temporary and would be minimized through adherence to UDOT Standard Specification 01355- Environmental Protection Section 1.11 - Noise Control. Extended disruption of normal activities is not anticipated, since no one receptor is expected to be exposed to construction noise of long duration.

Water Quality
Under the Preferred Alternative, effects from construction to ground and surface waters would be negligible. During construction there is a potential for temporary soil erosion and sediment/siltation impacts to nearby irrigation ditches and canals.

Invasive Species
The potential exists for invasive species to be introduced or propagated in the project area due to construction activities that disturb the existing ground cover.

Visual Conditions
There would be some temporary visual impacts to the project area with the addition of construction signs, barricades, exposed earth, and construction equipment during construction of the Preferred Alternative.

Energy
Construction of the Preferred Alternative would require the energy demands in order to build additional lanes for a seven-lane roadway and the associated intersection improvements.

Indirect Impacts
There would be no indirect impacts as a result of construction of the Preferred Alternative

Avoidance, Minimization, and/or Mitigation Measures

Social Conditions
Impacts during construction to residences will be mitigated through implementation of a traffic control plan with advance notice to those affected. Also, noise and vibration control and dust control measures will be used. Access to all businesses and residences will be maintained during construction except when it may be necessary to close an access for a few hours when grading or paving occurs in front of a driveway.

Economics
Access to all businesses will be maintained during construction except when it may be necessary to close an access for a few hours when grading or paving occurs in front of a driveway.

Air Quality
Prior to construction, a permit for air quality impacts will be obtained from UDAQ by the contractor. Fugitive dust during construction will be mitigated and controlled in accordance with a dust-control plan to be developed with UDAQ. This plan will include measures to minimize fugitive dust, such as application of dust suppressants and water sprays, minimizing the extent of disrupted surface areas, and restricting activities during high-wind periods.

Noise
The contractor will be required to abide by UDOT Standard Specification 01355 – Environmental Protection – Section 1.11 Noise Control.

Water Quality
To minimize construction impacts to surface waters, a SWPPP will be developed and incorporated into the final design plans of the project and an NOI form will be submitted to UDWQ prior to construction of the project. This plan will include the use of BMPs, which will minimize temporary impacts to water resources. Construction-related erosion and sedimentation impacts would be mitigated with the use of BMPs in accordance with provision of the Memorandum of Understanding (MOU) between UDOT and UDEQ and approved by UDWQ.

Hazardous Waste Sites
If hazardous waste is encountered during construction, mitigation will be coordinated in accordance with UDOT Standard Specification 01355 – Environmental Protection Section 1.6 Hazardous Material Discovered during Construction, which directs the contractor to stop work and notify the project engineer of the discovery. Disposition of the hazardous material then would take place under guidelines set by UDEQ.

Invasive Species
The Contractor will abide by UDOT's Special Provision 02926S - Invasive Weed Control to minimize the spread and introduction of invasive species. Some of the measures in the Special Provision include:

- Cleaning all earth-moving equipment entering project
- Treating existing noxious weeds ten days before starting earthwork operations
- Controlling invasive weeds using pre-emergent, selective, and non-selective herbicides as appropriate

Historic and Archaeological Resources
If historical, archaeological, or paleontological, objects are discovered during construction, the contractor will be required to abide by UDOT Standard Specification 01355 – Environmental Protection, Part 1.13, Discovery of Historical, Archaeological, or Paleontological Objects, Features, Sites, Human Remains, or Migratory Avian Species.

3.21 CUMULATIVE IMPACTS

The Council on Environmental Quality (CEQ) defines cumulative impacts as "…*impacts result(ing) from incremental impacts of the Preferred Alternative when added to other past, present, and reasonably foreseeable future actions, regardless of the agency or person(s) that undertakes the other actions*" (40 CFR 1508.7). Cumulative impact analysis is focused on evaluating sustainability of specific environmental resources in light of all of the forces acting upon it and can result from individually minor but collectively significant actions taking place over a specified time period. For a project to have a cumulative impact, it must first have a direct or indirect effect on the resource in question.

The resources that will be evaluated in this cumulative impacts analysis are:

- Relocations
- Noise
- Air Quality

The general geographic area addressed in this cumulative impacts analysis is Utah County, Utah. The time focus begins with the construction of I-15 in the 1960s and extends through the MAG planning period ending in 2030.

Past, Present, and Reasonably Foreseeable Future Actions

Past Actions

Prior to the construction of I-15, U.S. 89 (which includes the State Street corridor) was the major north – south travel corridor in Utah. Concurrent with the improvement in transportation afforded by the completion of I-15, population growth in Utah began to accelerate. Over the years, this increasing population trend has been particularly noticeable in Utah County. Two major past actions in the area have influenced the need for continuing the development of the State Street corridor including:

- **Private Land Development** – Following completion of I-15 in the 1960s, increasing population in northern Utah County demanded a congruent increase in housing and commercial real estate. This demand was manifest by an increase in the amount of agricultural and other open land being converted by private developers to meet these needs. In turn, the housing and commercial developments required an increase in municipal infrastructure, particularly transportation, to service the growing area.
- **Geneva Steel** – One of the major employers in Utah County was Geneva Steel, originally built during World War II to provide a secure source of vital war materials that was distant from potentially vulnerable mills on the coasts and the Great Lakes. The relatively high-paying and secure jobs at the steel mill helped fuel and sustain the growth experienced in housing and commerce described above.

Present Actions

Presently, the State Street corridor is experiencing almost exponential growth in both commercial development of the corridor itself, and residential development of the cities surrounding the corridor, influenced by its favorable climate and easy accessibility from major transportation routes such as I-15 and Geneva Road. Other actions that are presently affecting the development of the project area are:

- **Private Land Development** – Much of the remaining agricultural and open space land in Utah County is continuing the transition to both commercial usage and high density residential housing. Within the State Street corridor itself, much of the remaining single-owner residential housing is being converted or replaced by commercial development and high density housing.
- **Transportation Infrastructure Development** -- Realistically, Utah County is no longer a collection of bedroom communities for commercial businesses located in Salt Lake County. Utah County has become a commercial center in its own right as evidenced by the concentration and intensity of the commuter traffic on I-15. What was formerly observed to be a morning commute from Utah County north to Salt Lake County and the reverse evening commute has now changed to a continuous commute in both directions. This observed change has been

partially facilitated by continuing improvements in the transportation infrastructure. Some of these recent projects include improvements to the Interstate system in Salt Lake County, several improvements to I-15 interchanges in Utah County, widening of 800 North in Orem and the completion of SR 189 through Provo Canyon.

Reasonably Foreseeable Future Projects

In the reasonably foreseeable future there are numerous plans for major roadway construction, transit projects, and additional residential and commercial development. The most prominent of these proposed developments are shown in Table 3-16. Additional construction and improvement to the local street system is also a reasonably foreseeable action which is an anticipated follow-on to the continuing population growth and accompanying residential and commercial development.

Table 3-16. Reasonably Foreseeable Future Projects

Project or Activity	Description	Impacts	Project Status
Commuter Rail	Evaluation of commuter rail in Utah County	Analysis in process; no data available	Planning
SR-92	Widen existing road from I-15 to SR-146	Analysis in process; the impacts below are estimates. • Farmland – none • Air Quality – project conforms to State Implementation Plan • Water Quality – Increase in impervious surface could reduce water quality •Wetlands – 0 to 1 acres • Wildlife Habitat – Loss of 1 acre to 2 acres of habitat • Threatened and Endangered Species – None	Planning
Geneva Road	Widen existing Geneva Road from 800 North in Orem to Center Street	Analysis in process; the impacts below are estimates. • Farmland – 0 to 20 acres • Air Quality – project conforms to State Implementation Plan • Water Quality – Increase in impervious surface could reduce water quality • Wetlands – 0 to 5 acres • Wildlife Habitat – No impact expected • Threatened and Endangered Species – No impacts expected to June sucker or Ute ladies'-tresses	Planning
Airport Road	Build a new road from I-15 to Provo Airport or Center Street.	Analysis in process; no data available	Planning

Project or Activity	Description	Impacts	Project Status
North Utah County East-West Connector	Build new road north of Utah Lake from Redwood Road to I-15.	Analysis in process; the impacts below are estimates. • Farmland – 20 to 70 acres • Air Quality – project conforms to State Implementation Plan • Water Quality – Increase in impervious surface could reduce water quality • Wetlands – 10 to 40 acres • Wildlife Habitat – Some loss of habitat • Threatened and Endangered Species – None	Planning
I-15 Salt Lake and Utah counties	Capacity and safety improvements to I-15 in Salt Lake and Utah counties. Roadway improvements are planned from 12300 South in Salt Lake County to South Payson interchange.	Analysis in process; the impacts below are estimates. • Farmland – 490 to 530 acres • Air Quality – project conforms to State Implementation Plan • Water Quality – Increase in impervious surface could reduce water quality • Wetlands – 30 to 40 acres • Wildlife Habitat – Some loss of habitat east of Utah lake • Threatened and Endangered Species – None	Planning
Development	The area is developing quickly with traditional urban land uses (housing, commercial, retail, infrastructure, and institutional uses) through the 2030 planning period. The urbanized area is expected to increase from 30,500 acres in 2000 is about 70,000 acres in 2030. Development includes land developed as part of future roadway and transit projects identified in the long-range transportation plans. Large developments are listed below.	Loss of open space, farmland, wildlife habitat, and wetlands. Increase in air pollutant emissions, stormwater runoff, and noise.	Current and future land-development projects are expected to the year 2030. Some projects are currently being developed, and others are in the preliminary planning stages. Some of the 70,000 acres of development include anticipated urban growth based on population projections.

Developments	
Traverse Mountain, Lehi	8,000 housing units
Various developments, Eagle Mountain	25,390 housing units
Various developments, Lehi	1,270 housing units
Frank Gehry Point of the Mountain, Lehi	2,500 housing units
Thanksgiving Meadows, Lehi	327 housing units
Thanksgiving Point, Lehi	328 housing units

Cumulative Impacts

Relocations

Construction of the Preferred Alternative would potentially relocate four businesses, one residence, and one vacant building and would have a potential proximity impact to eight businesses and one vacant building. Other planned transportation projects in the general area would also likely involve relocations as existing roads are widened and new roads are constructed. Private development projects would also result in other relocations as land changes from residential to commercial use. It is anticipated that existing homes and commercial properties for sale in the area would likely serve as replacement for residents and business owners requiring relocation. The relatively limited number of residential and commercial relocations as a result of the Preferred Alternative would result in negligible cumulative impacts.

Noise

The primary existing noise source within the project study area along State Street is automobile and truck traffic. The Preferred Alternative would widen State Street to a consistent seven-lane cross-section along almost the entire corridor. Implementation of the Preferred Alternative would potentially result in noise impacts to as many as 81 residences, one park, one church and four businesses. It is likely that projected increased traffic along the State Street corridor would result in increased noise levels even if no-action is taken. Potentially, 60 residences, one park, one church and four businesses would be affected by increased noise levels, even if the Preferred Alternative is not selected.

There are several planned transportation projects in the cumulative impacts study area. The Preferred Alternative, in combination with other new and improved roads, is expected to increase traffic noise in the cumulative impacts study area. The Preferred Alternative would result in localized rather than regional increases in noise levels. However, the Preferred Alternative, in conjunction with other reasonably foreseeable projects, would not substantially change the existing noise environment.

Air Quality

Overall air quality in Utah County has been improving. In the past 25 years, Utah has made enormous progress in improving air quality. The Utah Annual Air Monitoring Network Plan prepared by the Utah Division of Air Quality (UDAQ) makes the following conclusions:

- Carbon monoxide (CO): The trend has been an overall decrease in CO levels. The decrease in CO levels is a result of the controls that are required on new vehicles, the impact of the county vehicle inspection and maintenance programs, and controls on industry.
- Nitrogen dioxide (NO_2): NO_2 controls have been required on vehicles and industry. As a result of those controls, there has been a slight decreasing trend in NO_2 levels.
- Ozone: The overall trend for ozone is that of improvement. The improvement is the result of the emission control devices on new vehicles, the county operated vehicle emission inspection and maintenance programs, and control required for industry.
- Particulate Matter with a diameter of less than ten micrometers (PM_{10}): Attainment of the PM_{10} standard has been maintained since 1993.
- Sulfur dioxide (SO_2): The SO_2 standard has not been exceeded since 1981. Since that time, State Implementation Plan (SIP) requirements and control measures implemented by industrial operations have resulted in low SO_2 levels.

With improvements to vehicle emissions and more stringent air quality controls, it is anticipated that air quality will continue to improve in Utah County through the 2030 planning period. Population growth in Utah County has had little effect on overall air quality, as demonstrated by the continuing

improvement in air quality throughout the region. Air pollutant emissions as a result of the Preferred Alternative would increase slightly due to the increase in vehicle miles traveled because of improved mobility.

Regional modeling conducted by MAG for the 2030 transportation conformity analyses demonstrated that all regionally major transportation projects (including the Preferred Alternative) would conform to the SIP and would not result in new violations of the NAAQS, increase the frequency or severity of existing violations, or delay attainment of the NAAQS.

Overall, the growth in the area by 2030 would likely be the same with or without the Preferred Alternative. However, the project would help reduce regional traffic congestion and improve travel times, which could help maintain compliance with air quality standards. Improved travel times throughout the region would reduce idling emissions of CO and volatile organic compounds.

3.22 CONTEXT SENSITIVE SOLUTIONS

Alternatives were developed using input from residents and land owners along the State Street corridor, affected or interested federal and state agencies, municipalities along the corridor, and current and future businesses. As a result, design-related Context Sensitive Solutions (CSS) would be implemented during the design phase of the proposed project. CSS would include:

- The development of a 117-ft roadway cross-section (reduced from 132-ft)

3.23 COMPARISON SUMMARY OF THE PREDICTED ENVIRONMENTAL EFFECTS OF ALTERNATIVES

A comparison summary of the predicted environmental effects of the No-Action Alternative and the Preferred Alternative is presented in Table 3-17.

Table 3-17. Environmental Effects Comparison Summary

Environmental Issue	No-Action Alternative	Preferred Alternative
Land Use 	• Would not change planned land uses or impact recreational resources • No immediate conversion of commercial and residential properties to roadway right-of-way	• Would convert approximately 4.4 acres commercial property and 0.7 acres residential property to roadway use. • Would not impact recreational resources
Farmlands 	• No impact	• No impact
Social Impacts 	• Increased travel times for the public and emergency response vehicles	• Decreased travel times for the public and emergency response vehicles
Environmental Justice 	• The No-Action Alternative or the Preferred Alternative would not produce disproportionately high adverse effects on environmental justice populations	

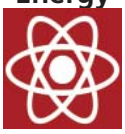
Relocations 	• No impact	• Potential Relocations:
		  • 4 businesses
		  • 1 residence
		  • 1 vacant building
		• Potential Proximity Impacts:
		  • 8 businesses
		  • 1 vacant building

Economic Conditions 	• Could hinder economic development by limiting the capacity on the State Street corridor	• Would facilitate economic development along the State Street corridor by providing access and an improved transportation system to the existing and planned commercial developments
Pedestrians and Bicyclists 	• Pedestrian mobility and safety would not be improved • Bicyclists would continue to travel on the shoulders (when present), sidewalks (when present), and travel lanes along the State Street corridor	• Would improve mobility and safety for pedestrians and bicycle users on the State Street corridor by construction of consistent 8-ft sidewalks and shoulders
Air Quality 	• No impact	• Not expected to cause violations of the PM_{10}, CO, O_3, NO_2, SO_2, lead, or other pollutants standards

Environmental Issue	No-Action Alternative	Preferred Alternative

Noise 	• Noise Impacts:
	  • 60 Residences
	  • 1 Park
	  • 1 Church
	  • 4 Businesses
		• Noise Impacts:
		  • 81 Residences
		  • 1 Park
		  • 1 Church
		  • 4 Businesses

Floodplains 	• No impact	• No impact
Water Quality 	• Drainage conditions would remain the same. Storm water would continue to flow through existing storm drain systems in areas where they are present, and where they are not, storm water would continue to infiltrate into the ground	• The impervious area would increase from 60 acres to 76 acres. This increase in impervious area would raise the 10-year peak flow on average 4.7 cfs along the State Street corridor. • Water quality would be improved through the addition of continuous curb and gutter, catch basins, storm drain pipelines, and detention basins
Wetlands 	• No impact	• Would impact approximately 0.08 acres of wetlands in a roadside ditch
Wildlife 	• No impact	• No impact
Threatened and Endangered Species 	• No impact	• No impact
Invasive Species 	• Would not provide additional opportunities for movement of invasive species through the landscape.	• Would provide opportunities for the movement of invasive species through the landscape
Historic and Archaeological Resources 	• No impact	• No Adverse Effect on nine properties due to minor right-of-way acquisition.

Environmental Issue	No-Action Alternative	Preferred Alternative
Hazardous Waste Sites 	• No impact	• No impact
Visual Conditions 	• Undeveloped land would continue to transition into commercial and residential use in accordance with approved land use master plans and zoning maps.	• Would build a facility that is visually consistent with the existing and planned conditions associated with a corridor dominated by commercial development.
Energy 	• Would not have additional energy requirements due to construction. However, energy expenditure may increase over the long term due to operational energy requirements.	• Would require the expenditure of energy for the construction of the roadway. However, savings in operational energy requirements may offset construction energy requirements, and in the long term, result in a net savings in energy usage.

Environmental Issue	No-Action Alternative	Preferred Alternative
Construction 	• No impact	• **Social Conditions** - Area residents and other people using the State Street corridor would experience minor, temporary inconveniences due to noise, dust, and travel delays. Access closures for residences would be minimal -- it may be necessary to close an access for a few hours when grading or paving occurs in front of a driveway. • **Economics** - Businesses along the State Street corridor may experience a temporary reduction in customers as a result of congestion and the associated avoidance of State Street during construction of the Preferred Alternative. • **Pedestrian and Bicyclists** - Temporary closure and reconstruction of sidewalks and shoulders. • **Air Quality** - Construction of the Preferred Alternative would result in temporary negative effects to air quality in the project area due to increased dust and particulates. • **Noise** - Construction noise impacts are considered temporary and would be minimized through adherence to UDOT Standard Specification 01355-Environmental Protection Section 1.8 - Noise and Vibration Control. Extended disruption of normal activities is not anticipated, since no one receptor is expected to be exposed to construction noise of long duration. • **Water Quality** - Effects from construction to ground and surface waters would be negligible. During construction there is a potential for temporary soil erosion and sediment/siltation impacts to nearby irrigation ditches and canals. • **Invasive Species** - The potential exists for invasive species to be introduced or propagated in the project area due to construction activities that disturb the existing ground cover. • **Visual Conditions**- There would be some temporary visual impacts to the project area with the addition of construction signs, barricades, exposed earth, and construction equipment during construction. • **Energy** - Would require the energy demands in order to build additional lanes for a seven-lane roadway and the associated intersection improvements.